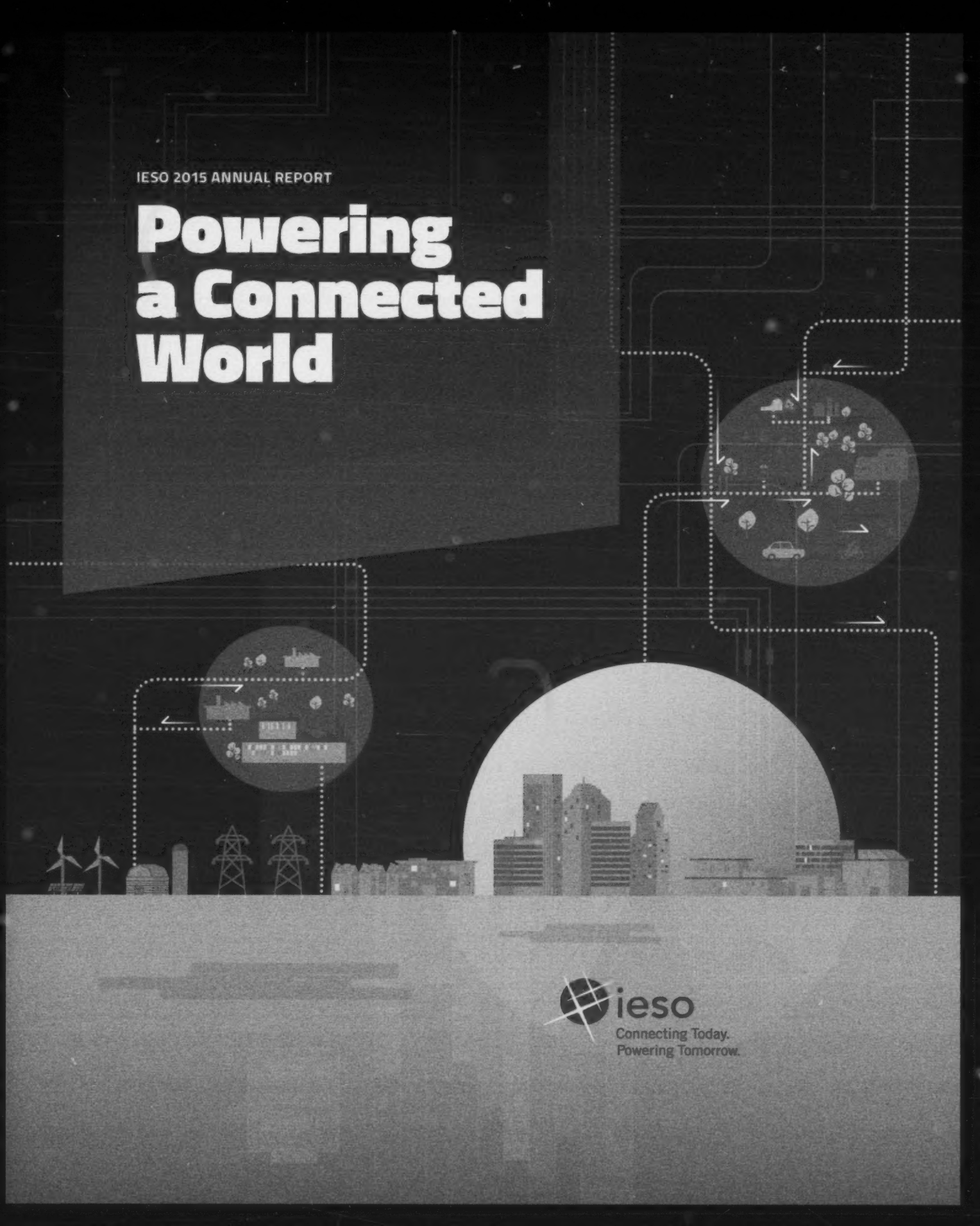
IESO 2015 ANNUAL REPORT
Powering a Connected World
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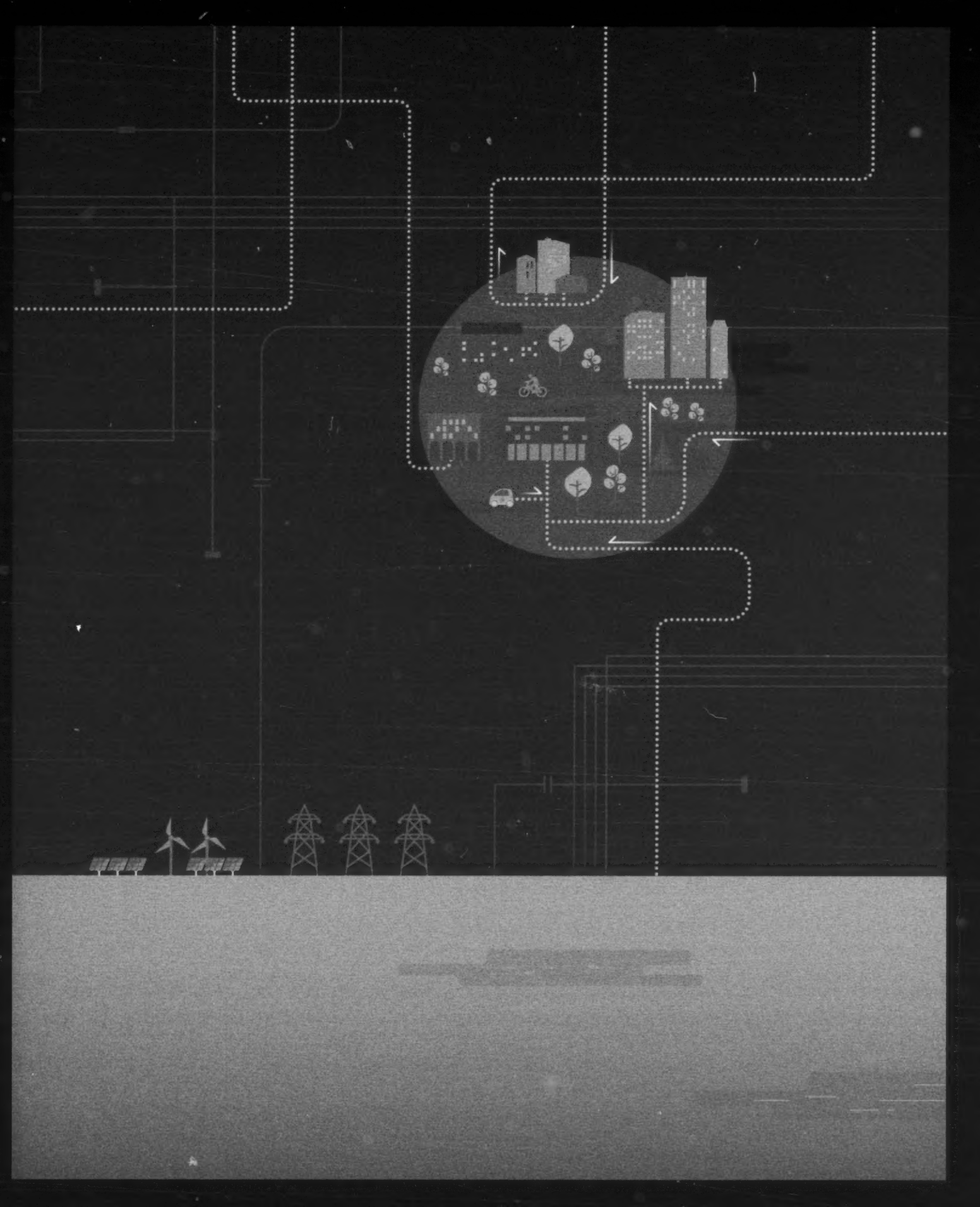
Connecting Today.
Powering Tomorrow.



OUR VISION

Powering a reliable and sustainable energy future for Ontario

OUR MISSION

We will do this by:

- Operating and shaping the electricity system and market in an effective and transparent manner
- Planning for and competitively procuring the resources that meet Ontario's electricity needs today and tomorrow
- Leading a culture of conservation
- Seeking and acting on input from our communities, customers and stakeholders
- Sharing relevant and valued information, data, analysis and expertise
- Attracting, retaining and developing a highly skilled and professional workforce

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Letter from the President & CEO and the Chair

Managing change is nothing new for Ontario's electricity sector. The province has been undergoing a deep-rooted and broad-based transformation for at least the past decade, if not longer. Now more than ever before, it's time to actively leverage some of these changes to ensure the province and its residents, businesses, utilities, institutions and other organizations are well positioned for decades to come.

A lot has changed since the Hydro-Electric Power Commission of Ontario was created in 1906, but electricity continues to be generated, transmitted and distributed to end-use consumers who expect a high degree of reliability.

Now, however, we're asking consumers to become more informed and more engaged by giving them the tools they need to use electricity wisely. These efforts are paying off.

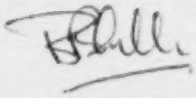
Through the collective actions of electricity consumers, Ontario has achieved over 3,600 megawatts in peak demand savings since 2006.

In an increasingly connected world, where our devices, appliances, thermostats, vehicles and many other items are capable of sending, receiving and acting on data related to energy consumption, we're at a pivotal point in revisiting the way we think about electricity and the value it provides.

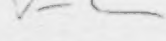
Through a number of measures aimed at including new voices in the energy dialogue, the Independent Electricity System Operator (IESO) is hoping to drive a shared understanding of the value proposition for a commodity that's become essential to modern life. This value continues to grow and change as new entrants bring new products, services, solutions and business models to the market, building on the innovation and foresight that Sir Adam Beck and his counterparts displayed more than a century ago.

Over the 12 months since the merger between the IESO and the Ontario Power Authority (OPA) created a new and expanded IESO, the company has made good progress in addressing the challenges of integration while delivering on our expanded mandate. As we move forward, the IESO remains focused on its priorities, which include enabling conservation and energy efficiency, planning and operating Ontario's power system, procuring supply, as well as administering and evolving the province's wholesale electricity market – all with a view to ensuring the province continues to benefit from a sustainable and reliable electricity system.

We'd like to thank our stakeholders, employees, sector partners and other groups for the input they've provided as we collectively develop a roadmap for the future. Engaging with the people, businesses and communities that are most affected by our decisions is a priority for the IESO. The decisions we make in the coming years will be far-reaching in scope and impact. We hope you'll work with us to help unlock Ontario's economic potential and power what's next.



Bruce B. Campbell
President and Chief Executive Officer
Independent Electricity System Operator



Tim O'Neill
Chairman of the Board
Independent Electricity System Operator

Power system planning involves many moving pieces and not-yet-known future requirements

The Plan to Secure Ontario's Energy Future

Planning a power system to meet the needs of the many constituencies impacted by its operation – generators, transmitters, distributors, traders, energy service providers, consumers, communities, system operators and others – is like trying to solve a complex jigsaw puzzle.

But unlike the more familiar version, this puzzle comes with moving pieces instead of static ones, multiple options to fit the pieces together, and an evolving picture of what the end state should actually look like.

Like every other power system, Ontario's grid is planned and operated with a view to delivering a reliable supply of electricity to users today, tomorrow and for years to come. Reliability, in this context, has two key components: adequacy (is there enough energy to meet users' needs?) and security (is the system sufficiently robust that it can withstand unexpected events?).

Meeting these criteria comes down to one basic principle: having the right resources, with the right characteristics, in the right place, at the right time.

This takes planning, a core IESO responsibility undertaken through a broad engagement framework that includes those individuals, organizations and institutions most impacted by our decisions. It's a highly iterative process that must consider short-, medium- and long-range electricity needs as well as impacts on cost, reliability, the environment and other considerations.

With a broad view of Ontario's electricity landscape, and relationships that span the sector, identifying the optimal solution is not something the IESO does in isolation. It's a task that requires discussion and input from multiple sources at different points in the process. Getting the right resource mix requires consideration of a range of options, which may include generation, conservation, energy storage, transmission and/or distribution, emerging communication and control technologies – or some combination of these alternatives. In all cases, a balance is sought to meet customer needs, system needs and sector needs.

In October 2015, the government tabled Bill 135, the *Energy Statute Law Amendment Act, 2015*. If enacted, it will enshrine a new approach to long-term energy planning that requires the IESO to produce a technical report that considers anticipated electricity supply, capacity, storage, reliability and demand, among other factors. The planning process for the Long-Term Energy Plan (LTEP) will also involve →

Renewable sources of supply, like these wind turbines, are playing a greater role in meeting Ontario's energy needs and helping the province transition to a lower carbon future.

extensive consultation with consumers, distributors, generators, transmitters, Aboriginal peoples and others.

Ontario's power system has undergone a significant transformation in recent years, and the province has made great strides towards a lower carbon future. Eliminating coal-fired generation and integrating renewable resources such as wind, solar and biomass are two of the most important steps in the process, but supply mix changes aren't the only way to achieve a more sustainable sector. Other developments that don't involve generation assets have occurred in parallel. These include conservation, the installation of smart meters, the implementation of time-of-use pricing, and the introduction of smart grid technologies that leverage automation, connectivity and control systems to reshape the way consumers interact with the power system – and vice versa.

Ontario's nuclear fleet produced

of the electricity generated in 2015.

FUTURE-PROOFING THE GRID

Planning for the future when the present is in a state of flux is no easy task. In recent years, the IESO has worked closely with both industry and local communities to identify viable options that support reliability and adapt the power system to meet changing conditions.

For electrical planning purposes, the province has been divided into 21 regions. Each region has specific needs depending on the age and condition of its existing electrical infrastructure, its demand profile, its prospects for economic and/or population growth, its conservation and energy-efficiency potential, and other planning criteria. Working closely with transmitters and distributors of electricity, as well as municipalities, First Nations and Métis communities, the IESO has developed and published Integrated Regional Resource Plans (IRRPs) addressing the reliability requirements for eight high priority areas (see page 6).

On a provincial basis, the rate of change is unlikely to slow in any material way over the coming decade. One of the most complex challenges will be managing planned outages to the province's nuclear fleet while units at the Bruce and Darlington Nuclear Generating Stations are refurbished (see page 9).

The refurbishments are an important step in securing reliable baseload power at a reasonable rate and provide a measure of certainty in fundamentally uncertain times. The amended Bruce contract adheres to the 2013 LTEP refurbishment principles and ensures that execution and operational risks will reside with the private sector operator. Similarly, Ontario Power Generation (OPG)'s execution of the

REGIONAL PLANS TO SUIT REGIONAL NEEDS

What you see when you're on top of a mountain looking down can be completely different from what you see when you're at the base looking up. It's all a matter of perspective.

Perspective plays a central role in the IESO's regional planning process, which tries to reconcile province-wide electricity needs with community-level requirements, priorities and preferences. By including municipalities, First Nations, Métis, community and business leaders, and the general public in the dialogue, the IESO hopes to ensure the electricity solutions that emerge suit local circumstances to the greatest extent possible.

Although community engagement is not new, in recent years the IESO has brought increased rigour and a consistent, province-wide approach to its outreach efforts by bringing new players to the table, offering greater transparency about the planning process and engaging communities early and often. Going outside the electricity sector for advice means the IESO hears directly from the people most impacted by decisions about regional and local perspectives.

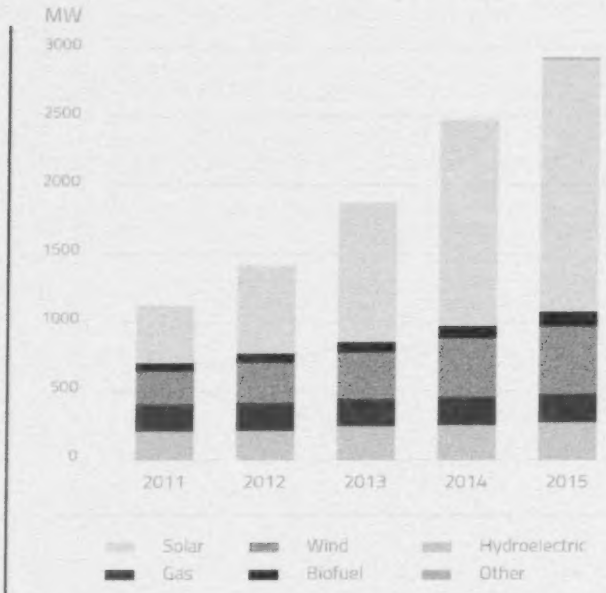
An integral part of the regional engagement process is the formation of a local advisory committee (LAC), which provides input and recommendations used to develop medium- and long-term regional plans. LACs typically comprise up to 18 members, representing municipalities, First Nations, Métis, consumers and citizens, the business community, and environmental and conservation groups. They play a vital role in helping the IESO and local transmission and distribution companies understand the community context. Energy is top of mind for most municipalities, especially those that are managing population growth, demographic change, industrial restructuring, increased emphasis on environmental sustainability and other factors.

An Integrated Regional Resource Plan (IRRP) is intended to identify solutions to meet near-, medium- and long-term needs. When electrical needs, defined based on a forecast that includes the impacts of targeted conservation, are considered urgent and substantial, a "wires" solution involving new transmission and/or generation infrastructure may be the only viable option in the near term.

Over a longer horizon, however, an IRRP may explore other innovative, community-based options, including distribution improvements, enhanced conservation and demand management, district heating, local (embedded) generation, storage and other emerging technologies. Although it is generally quite specific in its short-term recommendations, an IRRP must also account for the inherent uncertainty of a 20-year forecast, the expectation of technological change, the potential for broad economic shifts and other trends that may impact demand for electricity, as well as local perspectives about how that electricity is produced, delivered and consumed.

York Region Local Advisory Committee (LAC) members (from left to right) Jennifer Wong, Teresa Cline and Norm Vézina discuss future energy options for their region.

GROWTH OF EMBEDDED GENERATION



Like many other jurisdictions, Ontario is experiencing rapid growth in embedded (or distribution-connected) generation, most of which is wind and solar.

Darlington refurbishment will ensure that its contractors are held accountable to deliver on the project. The arrangements also include appropriate off-ramps to protect ratepayers, should circumstances change as the projects proceed.

The Bruce and Darlington refurbishments will benefit from close coordination and planning between Bruce Power and OPG.

The proposal to continue operations at the Pickering station until 2024 would help ensure reliability during the refurbishment period, during which there are other planned retirements within Ontario's generation fleet.

Balancing supply and demand is an activity that spans multiple timeframes, from second-by-second fine-tuning in real time to 20-year plans reflected in the regional and provincial long-term energy planning processes. Power systems must have the right combination of baseload generation – which runs pretty much all the time, with limited variability in its output – and other types of supply that are more flexible and more capable of responding to changing conditions on the grid. They must also have transmission and distribution networks that can deliver energy when and where it's required. More and more, they also rely on engaged consumers, incented to make informed decisions about their energy consumption.

ONTARIO'S SUPPLY MIX

By 2025, renewable resources like wind, solar, bioenergy and hydro facilities are expected to make up nearly 50 percent of Ontario's installed generating capacity.

GROWTH IN DISTRIBUTED ENERGY RESOURCES

Like many jurisdictions, Ontario is managing a number of factors impacting the shape and structure of its electricity sector. On the supply side, there has been substantial growth in renewable generation in recent years. At the end of 2015, Ontario had 3,234 megawatts (MW) of transmission-connected wind generation as well as 140 MW of transmission-connected solar generation.

But these figures only tell part of the story. Ontario also had nearly 3,000 MW of IESO-contracted embedded generation at the end of 2015, largely driven by participation in the Feed-in Tariff (FIT) and microFIT programs. While these resources make important contributions to meeting Ontario's demand for electricity, they can also pose some unique challenges in the operating environment.

Connected as they are at the distribution level, the hourly operations of some of these resources are not known by the IESO. Although telemetry data are available for approximately 1,000 MW of embedded generation, they do not provide the full picture on output from embedded generation.

Despite this lack of broad visibility, these resources are starting to have a material impact on the bulk power system – especially when it comes to forecasting demand for electricity in real time. The IESO incorporates the impacts of embedded generation into both the operational and planning timeframes.

For the operational timeframe, a forecast of embedded solar and wind output is incorporated into the demand forecast. For the planning timeframe, the impact of embedded generation is incorporated based on historical production by fuel type.

This absence of information about some distribution-connected resources can impair the IESO's situational awareness and result in undesirable outcomes, including the over-commitment (or under-commitment) of generation units. For this reason, the IESO continues to closely monitor developments at the distribution level – and will be working with local distribution companies (LDCs) to enhance co-ordination of operations.

Despite the added complexities, embedded generation is a valuable addition to the power system and can improve the efficiency of power delivery to the people and businesses that need it. Generation assets located closer to end-users can significantly reduce the amount of transmission infrastructure required to satisfy their energy needs. Furthermore, embedded generation can also minimize line losses and lower the construction costs, lead times and environmental impacts associated with large-scale transmission expansion.

As noted, much of the generation that's being built in Ontario today is renewable in nature, primarily wind and solar. Whether connected at the high-voltage transmission level or the low-voltage distribution level, variable generation affects the way power systems are planned, designed, built and operated.

ONTARIO'S EVOLVING CLIMATE AGENDA

It's been a long and winding road but Ontario has one of the lowest carbon electricity systems in North America.

With a grid that's dominated by clean energy resources, including nuclear, hydroelectric and other renewables, Ontario has already made great strides towards a sustainable energy future. After decades of cost-effective, reliable operation, the province shuttered its last coal-fired power plant in 2014. Although it had complex operability implications for the IESO, removing coal-fired power plants from Ontario's supply mix is the single largest greenhouse gas (GHG) reduction initiative in North America.

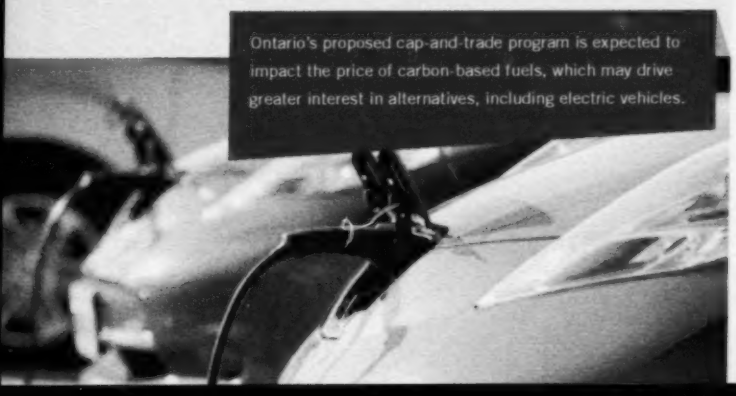
The closure eliminated more than 30 [illegible] tonnes of annual GHG emissions, equivalent to taking seven million vehicles off the road. To affirm its long-term support for cleaner sources of electricity, in the lead-up to the United Nations' Conference of the Parties in Paris during the fall of 2015, Ontario passed legislation to permanently ban coal-fired electricity generation in the province.

In a series of announcements in the spring and summer of 2015, the government unveiled its Climate Change Strategy, which is designed to reduce GHG emissions to 80 percent below 1990 levels by 2050, and support the transition to a prosperous, low-carbon economy. Ontario plans to impose a limit on GHG emissions through a cap-and-trade program that aligns with the Western Climate Initiative and participating jurisdictions, which include Quebec and California.

Although specific program details are still being finalized, the design principles that underpin Ontario's cap-and-trade regime span a number of areas, including environmental feasibility, competitiveness and economic growth, administrative efficiency, equitability and transparency, among others. The proposed implementation date is January 1, 2017.

To ensure the impacts on the province's electricity sector are fully understood and considered as the cap-and-trade program is designed, the IESO has provided advice, information and analysis to the government. The IESO's priorities in providing input reflect its broad mandate and its expertise in areas such as market administration, system operations, contract management, long-term planning and economic analysis.

The IESO has several overlapping objectives related to implementation of a cap-and-trade system in Ontario. They include ensuring that an effective, efficient and transparent price of carbon is reflected in the market price for electricity; impacts on generation supply contracts are minimized and result in efficient operations; negative impacts on system reliability are avoided; ratepayer impacts are minimized to the extent possible; and domestic generation and imports are not disadvantaged compared to generators operating in jurisdictions that lack a carbon pricing mechanism.



Ontario's proposed cap-and-trade program is expected to impact the price of carbon-based fuels, which may drive greater interest in alternatives, including electric vehicles.

Distributed energy resources are playing a growing role in meeting Ontario's energy needs but pose some **unique operational challenges** to the IESO and local distribution companies.

Some distributed generation creates two important challenges for Ontario's electricity system: variability and uncertainty. The output from these units changes according to the availability of the primary fuel: wind and sunlight. Furthermore, the magnitude and timing of output from these units is less predictable than that of conventional generation.

While operating the power system has always been a balancing act, maintaining that balance presents new challenges in a number of areas, including generation commitment and intertie scheduling, frequency regulation, voltage control, ramping and load following, as well as operating reserve requirements.

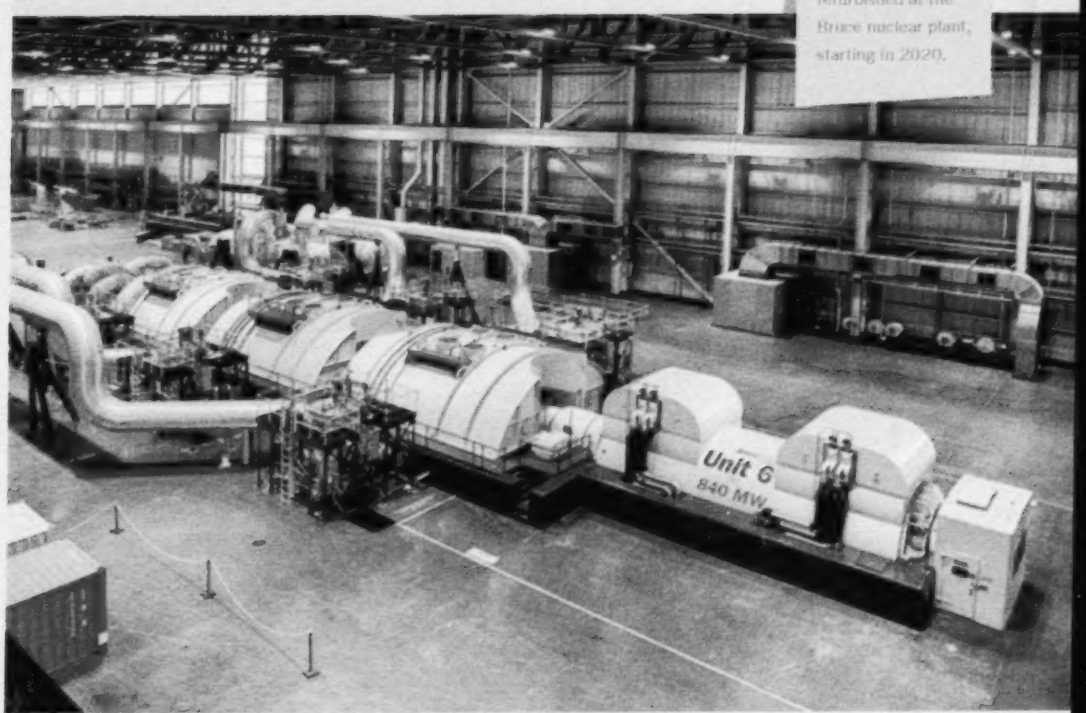
The IESO's Renewables Integration Initiative (RII) introduced a set of tools in 2013 to address both variability (through dispatch and visibility) and uncertainty (through centralized forecasting) of the transmission-connected variable generation fleet. As Ontario moves towards implementing the 2013 LTEP target of having 20,000 MW of renewable capacity online by 2025, it will become increasingly important for the IESO to have enhanced capabilities to respond to changing situations quickly and flexibly.

Ontario's cap-and-trade regime is another factor with the potential to influence Ontario's power system planning processes, particularly if it results in greater electrification of industry sectors that are currently dependent on greenhouse gas (GHG) emitting fossil fuels, including transportation. A change of this magnitude will not happen overnight, and the IESO will need to consider climate policy outcomes in its demand forecasts, as well as its planning models and operational requirements.

REFURBISHMENTS SECURE ONTARIO'S NUCLEAR FUTURE

Nuclear energy is the backbone of Ontario's electricity system. The province's nuclear fleet accounts for one-third of Ontario's total installed capacity of approximately 39,000 megawatts (MW) and produced 60 percent of all the electricity generated in Ontario in 2015. Its steady supply of baseload energy complements both Ontario's renewable fleet, which is inherently more variable in its output, and the natural gas and hydroelectric fleets, which can provide peaking power that matches fluctuations in demand.

Recent government decisions to refurbish several nuclear units mean that nuclear will continue to play a foundational role for decades to come. These refurbishments will also mean reduced carbon emissions, given reduced production from natural gas-fired resources.

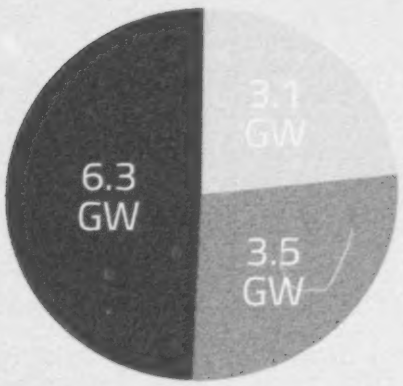


Unit 6 will be the first unit refurbished at the Bruce nuclear plant, starting in 2020.

In December 2015, the Government of Ontario announced that an agreement had been reached between the IESO and Bruce Power to refurbish the six remaining units at the Bruce Nuclear Generating Station, thereby securing 6,300 MW of electricity from the site (including Bruce A units 1 and 2, which completed refurbishment in 2012).

As part of the agreement with the IESO, Bruce Power will continue to provide 2,400 MW of flexible nuclear generation. Although nuclear units are generally designed to run flat-out for extended periods of time, the units at the Bruce facility are equipped with condenser steam discharge valves that enable their output to be curtailed when conditions warrant reductions in generator output – a valuable attribute when the IESO needs to manage surplus conditions.

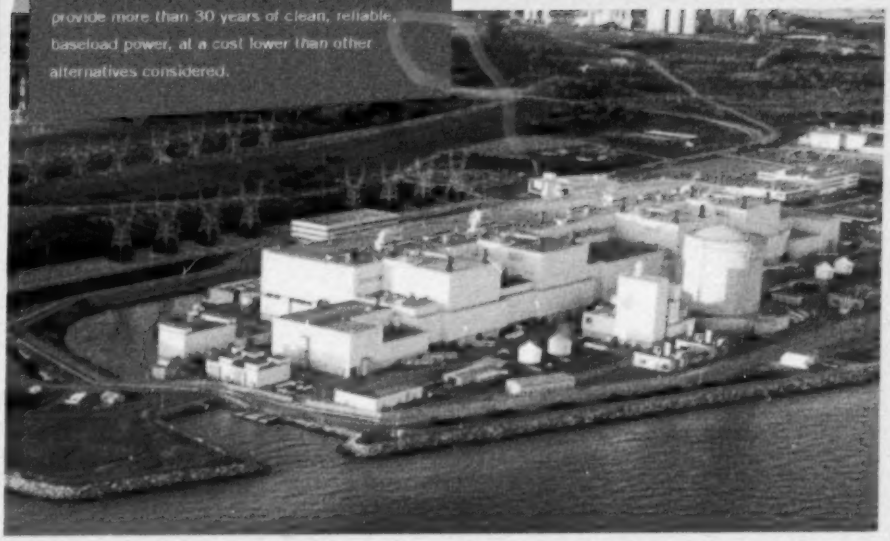
INSTALLED NUCLEAR CAPACITY IN ONTARIO



Ontario has three nuclear facilities – Darlington, Pickering and Bruce – that provide reliable baseload electricity and, in the case of the Bruce units, valuable operational flexibility.

CREDIT: Photo courtesy of Bruce Power

Ontario Power Generation's $12.8 billion investment in the Darlington refurbishment will provide more than 30 years of clean, reliable, baseload power, at a cost lower than other alternatives considered.



CREDIT: Photo courtesy of Ontario Power Generation

The agreement with Bruce Power is the product of two years of negotiations, as well as extensive analysis, due diligence, and independent fairness and technical review.

Cost was an important consideration. The initial price for Bruce Power's generation was set at $65.73 per megawatt-hour (MWh) starting January 1, 2016. The average price over the life of the contract is estimated to be $77/MWh, or 7.7 cents per kilowatt-hour (kWh). This is some of the lowest-cost power the IESO has under contract.

Under the contract, virtually all the execution risk lies with Bruce Power. Moreover, if the cost of future refurbishments is uneconomic, the IESO can elect not to proceed with those refurbishments. However, if actual refurbishment costs are less than the estimates, the savings are shared between electricity consumers and Bruce Power.

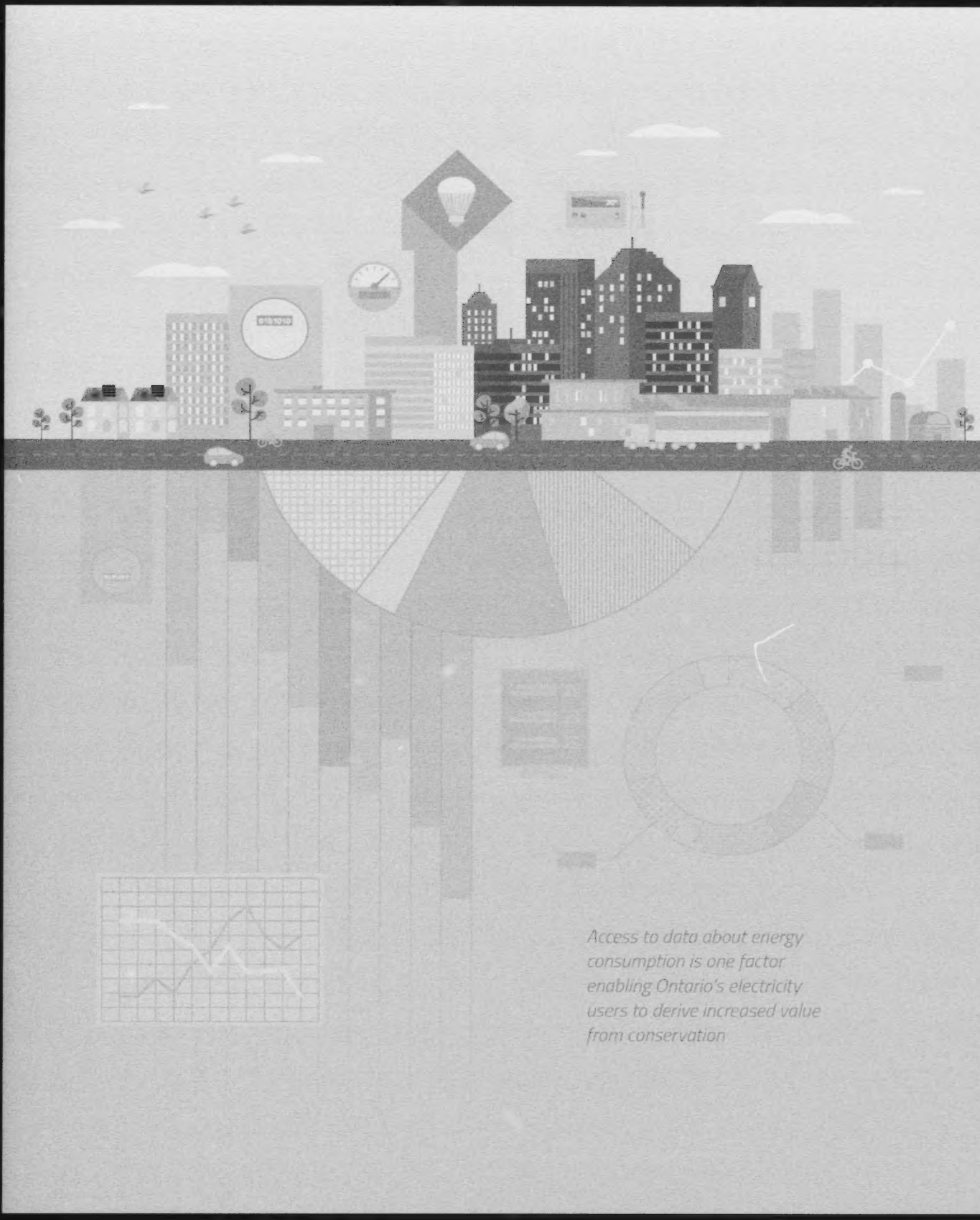
The government has also announced the refurbishment of all four units at Ontario Power Generation's Darlington Nuclear Generating Station (for a total of 3,500 MW) and the ongoing operation of six units (totalling 3,100 MW) at the Pickering Nuclear Generating Station to between 2022 and 2024, pending regulatory approvals.

OPG estimates that refurbishing Darlington and extending the service life of the Pickering units to 2022/2024 offers the best combination of low cost and low emissions.

The IESO provided support for the government's decisions with respect to the Darlington refurbishment and the ongoing operation at Pickering. These investments will be an important step in providing long-term, lower-cost, emissions-free and reliable baseload power for several generations, making the best use of existing assets, including transmission facilities.

The OPG refurbishments also have protection mechanisms including "off-ramps" – provisions that allow the province to re-assess the value to ratepayers before proceeding to the next stage.

The first refurbishment outage will begin at Darlington in late 2016 and outages will continue over the next decade. The IESO will carefully manage all outages to ensure continued reliability throughout the refurbishment period.



Access to data about energy consumption is one factor enabling Ontario's electricity users to derive increased value from conservation

Enabling a Culture of Conservation: The Next Phase for Ontario

Over the past 10 years, Ontario has seen a complex and fundamental restructuring of the ways in which electricity is generated, transported, monitored, managed, regulated and consumed. During this period, conservation in Ontario has evolved to a strategic, multi-dimensional framework with an emphasis on technology-driven solutions that deliver enduring, verifiable results.

Energy efficiency, demand management and load displacement have proven to be cost-effective resources that are being leveraged in a variety of ways to benefit individuals, sectors of the economy and the province as a whole. And building on Ontario's smart meter infrastructure, data-driven apps and solutions are already delivering new insights into consumption patterns and supporting better decision-making about how and when to use electricity.

In the residential context, energy efficiency can both lower household electricity bills and improve home comfort. In commercial and industrial settings, where bigger projects deliver bigger energy savings, energy conservation can boost the competitiveness of Ontario's businesses by optimizing operational processes and systems, improving working conditions, and increasing employee productivity and retention. Furthermore, as Ontario moves towards a low carbon future, saving energy and the associated reductions in greenhouse gas emissions has taken on a new urgency. →

CONSERVATION SUPPORTS RELIABILITY

Conservation and energy efficiency are already making a difference. As important as they are in reducing peak demand and minimizing the costs associated with meeting those peaks, conservation and energy efficiency contribute a great deal more to the province's reliability picture. Over the past five years, Ontario's conservation efforts have become increasingly visible, and increasingly material, for the IESO's planners, forecasters and operators. Conservation has become an important consideration not just in long-term planning, but over the entire time horizon for which the IESO is now responsible.

For the IESO, conservation is considered on the macro scale as well as the micro scale. It can take a variety of forms. If an automotive manufacturer scales back production when the grid is strained, that's conservation. Similarly, a decision by a small industrial consumer to install behind-the-meter generation reduces demand on the existing power system. The conservation umbrella also includes municipalities that optimize the performance of their water treatment plants, as well as commercial property owners who install motion-sensitive lighting systems.

Although the scale may be different, energy efficiency is not limited to the industrial, commercial and institutional realms. A residential consumer who buys an energy-efficient washer and dryer, or redeems a coupon and installs high-efficiency LED lighting, or adds weatherstripping around leaky doors and windows, is also driving the province's conservation results. All of these decisions are creating a conservation culture that is increasingly factored into the IESO's planning forecasts and models.

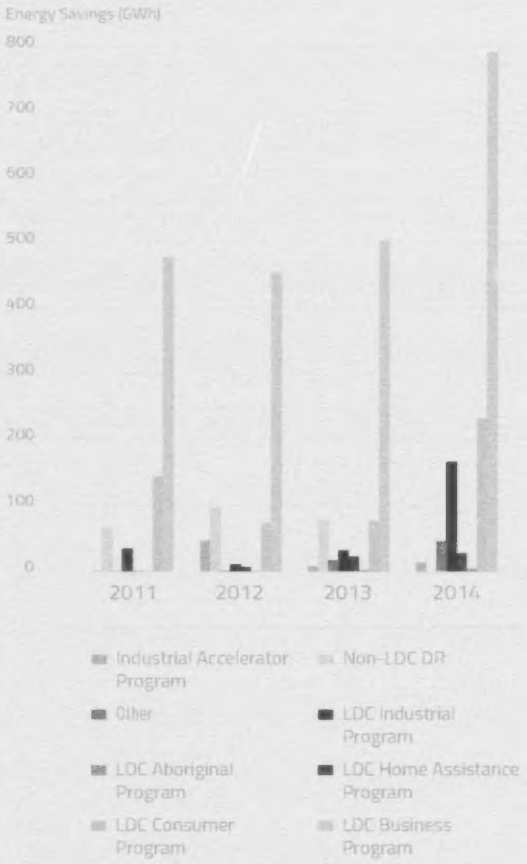
Ontario has a highly diverse customer base comprising residential, commercial, industrial, institutional and other electricity users. Over the past decade, the province has successfully engaged consumers in the dialogue centered on the value of energy efficiency through a variety of means, including the suite of programs launched in 2011 under the Save on Energy brand. Through these programs, as well as changes to codes and standards, Ontario has saved 9.9 billion kilowatt-hours (kWh) of electricity in the past 10 years.

The 2011-2014 conservation results show just how powerful and effective a broad commitment to conserve can be in helping Ontario reduce its demand for electricity. Between 2011 and 2014, the Save on Energy suite of programs reduced total electricity consumption in the province by 6,553 gigawatt-hours (GWh), exceeding the energy-savings target set by the government by nearly 10 percent.

Capability-building remains an important contributor to the sector's conservation successes, ensuring that a skilled network of professionals exists to deliver energy-efficiency and conser-

In addition to participating in the Save on Energy suite of conservation programs, Vision Extrusions is also part of the Industrial Conservation Initiative, through which the company proactively manages its peak demand on a real-time basis.

2011-2014 INCREMENTAL ANNUAL ENERGY SAVINGS



Energy savings achieved through the local distribution company (LDC) Business Program stream outpaced all other Save on Energy program categories between 2011 and 2014.

vation services where and when they're needed. In that way, they can support system reliability, help businesses manage their energy use and stay competitive, and help families improve the comfort and efficiency of their homes.

Ensuring those individuals involved in conservation-oriented activities are aware of industry-identified, tested and proven best practices is an important success factor. More than 5,000 people participated in IESO-supported training programs between 2011 and 2014. Spanning a number of areas related to energy efficiency, these programs and courses included Certified Energy Manager training; building operator certification; HVAC installation optimization; Certified Measurement & Verification Professional training; and low-rise residential builder and construction trades training, among others.

Training is just one aspect of the IESO's multi-dimensional efforts to foster and promote a culture of conservation. By the time the 2011-2014 framework ended, 2,100 energy audits had been executed, 30,000 retrofit projects had been completed, 81,000 small business lighting projects had been completed and 9.9 million Save on Energy coupons had been redeemed to purchase energy-saving products such as ENERGY STAR certified light bulbs and ceiling fans, programmable thermostats, lighting control devices, advanced power bars and outdoor clotheslines. →

COLLABORATING FOR SUCCESS

Ontario's 70+ local distribution companies (LDCs) are learning that tackling common issues together can resultin better solutions.

LDCs have collaborated on marketing and promotional activities in the past, and the IESO is actively encouraging them to broaden their collaborative efforts to achievegreater efficiencies in administration as well as program design and delivery. Launched in 2015, the LDC Collaboration Fund has a total budget of $25 million, which will be committed over the six-year duration of the Conservation First Framework. The fund is designed to encourage deeper collaboration on program delivery among two or more LDCs and support LDC-led working groups' efforts to design new province-wide conservation and demand management (CDM) programs.

By the end of 2015, the IESO had approved 14 projects involving 35 LDCs on the basis of six key funding principles: accountability, fairness and consistency, transparency, ratepayer value, actionability and innovation. With this funding, LDCs will be able to better mitigate the risks involved in the first years of delivering new training and educational content to their customers and channel partners, engaging new energy managers across multiple service territories, and undertaking joint procurements for legal, consulting and engineering services. In addition, province-wide working groups will be able to engage professional support to help them design new initiatives.

LDCs may also use Collaboration Fund support to work with partners in the natural gas sector in an effort to find new ways to deliver services efficiently to shared customers, whether they are residential, mid-sized and large industrial, or commercial and institutional consumers.

In this way, collaboration among LDCs and between electric and gas utilities is expected to drive greater administrative efficiencies, enhance information sharing and foster stronger working relationships across the sector, leading to measurable results and desired outcomes.

SAVE ON ENERGY™
POWER WHAT'S NEXT

SAVE ON ENERGY POWERS A BRIGHT FUTURE FOR ONTARIO

It's time to reframe the conversation about conservation. In recent years, most Ontarians have focused on the financial benefits of energy efficiency. But as people will soon be reminded, saving energy means a lot more than just saving money.

A multi-channel media campaign involving traditional and social media will focus, instead, on demonstrating some of the other, unexpected benefits of energy performance improvement, such as more comfortable homes; more efficient, competitive businesses; and more sustainable communities.

After years spent building awareness and support for the Save on Energy (SOE) suite of programs, the IESO will be working with local distribution companies (LDCs) and other sector partners over the coming months to explore how electricity users of all types can leverage energy savings to power what's next – however they define "next."

At the core of the Conservation First Framework is the idea of optimizing the use of existing resources to ensure Ontario's energy needs are met in the most cost-effective ways possible. By avoiding the costs associated with building new generation, transmission and/or distribution infrastructure, demand-side measures including conservation, energy efficiency and demand response will help Ontario achieve the ambitious conservation targets of 30 terawatt-hours by 2032 set out in the 2013 Long-Term Energy Plan.

Both collectively and individually, Ontario's electricity consumers stand to benefit from more energy-efficient homes, businesses, arenas, hospitals, schools, water treatment plants and other public buildings. And with the help of LDCs, which are responsible for local efforts and promoting SOE incentives within their respective service territories, they'll be able to start visualizing what comes next.

A NEW FRAMEWORK FOR CONSERVATION

With the conclusion of the earlier framework and the introduction of the six-year Conservation First Framework (CFF), 2015 was a year of transition – not just for the IESO, the lead agency charged with delivering on the government's conservation agenda. It was also transitional for local distribution companies (LDCs), retailers, contractors and other partners involved in the design, development, implementation and evaluation of Ontario's conservation programs.

The CFF implementation resulted from extensive consultations between the various agencies involved in the sector, LDCs, gas utilities and others. It's intended to provide utilities with long-term stable funding and budgets; encourage cost-effective electric utility conservation plans; enable greater electric utility autonomy; make province-wide programs available for delivery; ensure sufficient flexibility to align conservation programs with local needs; support streamlined approvals and administrative requirements; encourage innovation; and drive regional and natural gas utility collaboration.

By the end of 2015, the IESO had reviewed and conditionally approved all but one of the 42 conservation and demand management (CDM) plans submitted by Ontario's LDCs. Through these plans, LDCs describe how they plan to achieve their individual CDM targets, which are assessed on the basis of each LDC's share of total demand. By the time the CFF sunsets on December 31, 2020, total consumption in the province is targeted to have dropped by seven terawatt-hours (TWh) through LDC-delivered programs, and an additional 1.7 TWh of savings achieved through the Industrial Accelerator Program for large, transmission-connected customers.

Through the CFF, the IESO aims to reach electricity consumers of all stripes to help them understand the full value of conservation. While it's easy for consumers to see how conservation can benefit them personally, it's often less clear to end-users that conservation now plays an essential role in the IESO's grid-related planning and operational functions – such as the potential for conservation to meet local system needs and defer investments in other, potentially more costly infrastructure. More than that, conservation is also an important consideration as communities in many parts of the province deal with rapid population growth coupled with increased demand from the energy-consuming devices, appliances and systems that make up the ever more connected home.

For residential users, conservation behaviours can be motivated by a number of factors – financial, environmental and social. For most business owners, managers and operators, saving money is the main driver behind saving energy. But as they're learning, energy efficiency doesn't just reduce consumption, it can also enhance building performance, reduce maintenance costs and lost productivity resulting from equipment downtime, and support improved operational outcomes – all while contributing to a more sustainable society.

CREDIT: Photo courtesy of Weyerhaeuser Company Limited

THE DRIVE TO ENERGY EFFICIENCY

For many of Ontario's large industrial electricity consumers, reducing or shifting their usage can provide a big boost to the bottom line. To help achieve their objectives, a growing number are looking to the IESO's Industrial Accelerator Program (IAP), which is designed to help eligible transmission-connected companies fast-track major energy-efficiency projects.

Weyerhaeuser Company Limited, a global forest products company specializing in timberlands, wood products and cellulose fibre, is a case in point. At the company's mill in Kenora, Weyerhaeuser employees make every effort to help the company remain competitive by reducing costs and improving operating efficiencies in the laminated strand lumber manufacturing process.

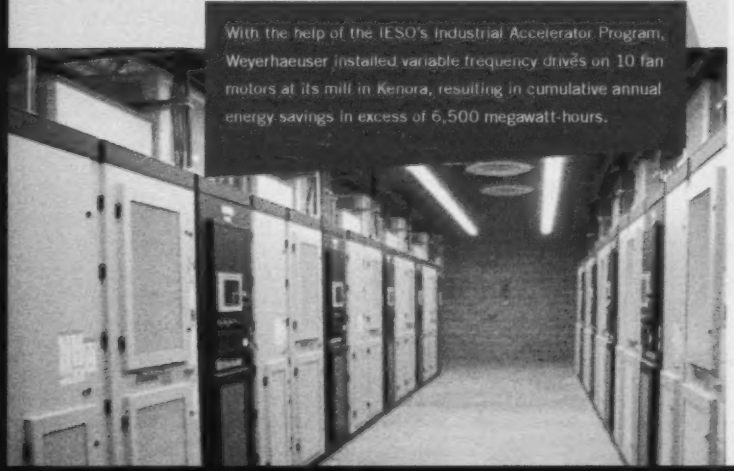
TimberStrand® is a unique engineered lumber product used to make framing and structural materials for residential construction and in commercial applications such as millwork and concrete forms. The Kenora press can produce billets of TimberStrand® that are eight feet wide by 64 feet long and up to 3.5 inches thick. The billet can then be sawn into any combination of widths and lengths for sale to customers.

As part of the IAP-funded project, variable frequency drives were installed on 10 fan motors, allowing the flow to be controlled by adjusting the fan speed to meet process requirements, as opposed to running the fans at full speed and adjusting the flow with dampers.

Running fans at different speeds resulted in substantial savings at the Kenora plant. Cumulative annual energy savings have exceeded 6,500 megawatt-hours (MWh) for the 4,160-volt motors ranging from 350 to 500 horsepower. Weyerhaeuser tapped into an IAP incentive that approached $1.5 million, which included a detailed engineering study that was completed before equipment upgrades began.

To further control its energy costs, Weyerhaeuser was also the first transmission-connected participant to hire an IAP-funded energy manager – a new element of the program that came into effect in June 2015. Energy managers are on-the-ground resources who can identify conservation opportunities and champion strategic energy management practices within one or more organizations.

Within the first three months alone, Weyerhaeuser's energy manager had identified potential electrical energy savings in excess of 2,000 MWh for each of the next two years. The money and energy saved through these projects will help support the organization as it builds on the conservation successes it has already realized, not just with electricity but also with natural gas, diesel and propane.



With the help of the IESO's Industrial Accelerator Program, Weyerhaeuser installed variable frequency drives on 10 fan motors at its mill in Kenora, resulting in cumulative annual energy savings in excess of 6,500 megawatt-hours.

Through the **Conservation First Framework**, the IESO is working with local utilities to reduce electricity consumption in Ontario by

7

terawatt-hours

by the end of 2020.

CONSERVATION AND THE NEW ENERGY ECOSYSTEM

Going forward, the conservation landscape in Ontario will be defined by a number of converging factors, including connectivity, collaboration, decentralization, flexibility and analytics. Social benchmarking, for example, has already become an important tool in helping users understand – and change – their energy consumption patterns.

Given the breadth of its mandate and its relationships, the IESO already plays a critical integrative role, bringing individuals and institutions together. Since 2005, the IESO has also played a leading role in funding research and development into new, innovative technologies, energy management practices and programs, through the Conservation Fund (see pages 17-18). The IESO will continue to invest in technologies and solutions that have the potential to deliver cost-effective energy-efficiency solutions for Ontarians, and will go even further to make energy efficiency and conservation standard business practices and common household norms.

Although the Conservation Fund is the most visible of of its programs, the IESO offers a range of funding programs to help make Ontario's electricity system cleaner, greener and smarter. With a focus on education, capacity building and community energy planning, these programs support Aboriginal communities, municipalities, public sector entities and co-operatives in the design and delivery of renewable energy and conservation initiatives.

Going forward, the IESO will continue to engage a broad spectrum of stakeholders, including First Nations and Métis communities, through formal as well as informal mechanisms. It will also encourage Ontarians to share their ideas, experiences and opinions. In doing so, the IESO hopes to ensure that conservation programs and initiatives are well designed and effective, and evolve in lockstep with new technologies and new market mechanisms.

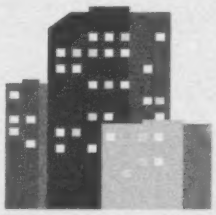
THE RACE TO REDUCE ENERGY CONSUMPTION

A little friendly competition – and some bragging rights – can go a long way in motivating people to reduce their electricity usage. It can also support the creation of benchmarks against which others can compare their own consumption, and drive a deeper understanding of energy-related usage patterns.

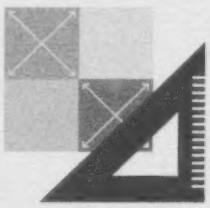
With seed funding from the IESO's Conservation Fund in 2009, CivicAction's Race to Reduce kicked off in 2011 and concluded in 2014. The energy reduction competition challenged landlords and tenants in the Greater Toronto and Hamilton Area (GTHA) to work together to collectively reduce energy use in office buildings by at least 10 percent over a four-year period. The initiative offered annual awards, supported a focus on results-based performance, and encouraged competing participants to share their experiences of what worked.

When final results were revealed in November 2015, it became apparent the program was a huge hit. There was a drop of close to 193 million equivalent kilowatt-hours (ekWh) or 12.1 percent in collective energy use over four years, far surpassing the initial stretch target. By CivicAction's estimates, that's equivalent to taking more than 4,200 cars off the road and putting $13.7 million back into office landlords' and tenants' pockets.

The Race to Reduce, one of the largest regional energy challenges in the world, involved:



196
BUILDINGS



69
MILLION
SQUARE FEET

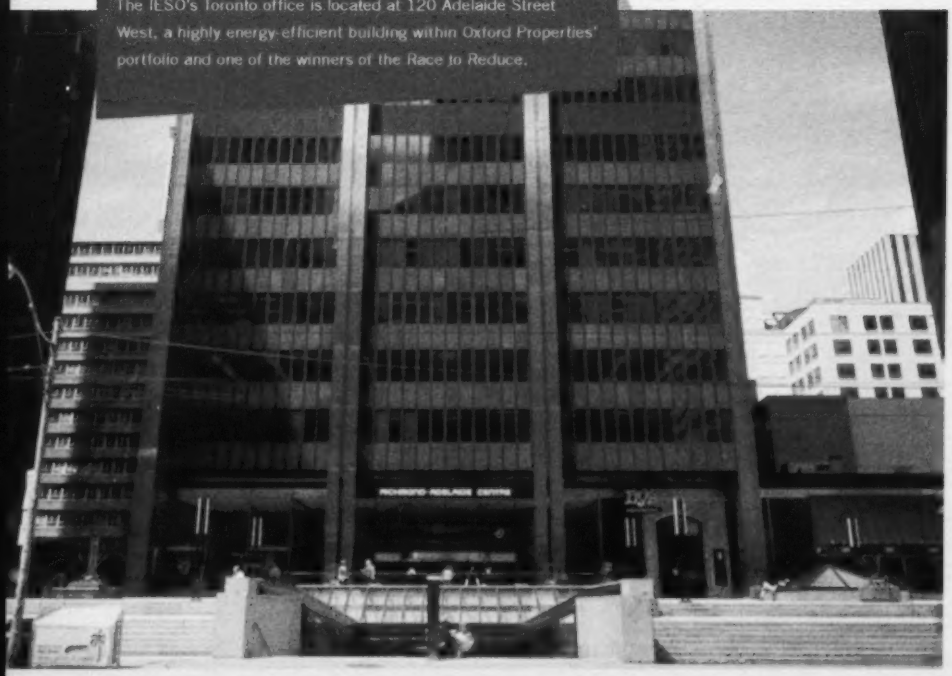
The Race to Reduce became one of the largest regional energy challenges in the world, with 196 buildings participating in the program, representing more than 69 million square feet or 42 percent of the commercial office space in the GTHA. Twenty-one of these buildings reduced their energy use by more than 20 percent, with Oxford Properties Group's Richmond-Adelaide Centre in Toronto – home to the IESO's corporate offices – cutting its energy consumption by 35 percent over the span of the race.

Early on in the process, CivicAction identified the four most common barriers to energy efficiency in office buildings. They include a lack of good data to understand a building's energy use and where it stands in relation to others and industry standards; a lack of knowledge of what buildings are capable of and what others have done successfully; a lack of information on the tenant business case for energy-efficiency investments; and a lack of effective communication among landlords and tenants concerning energy efficiency.

Although it delivered other important benefits, the greatest legacy of the Race to Reduce is the establishment of a baseline for measurement and comparison going forward. As part of the initiative, the IESO required the use of ENERGY STAR Portfolio Manager, an established online tool for energy management created by the U.S. Environmental Protection Agency to measure and track energy and water consumption, as well as greenhouse gas (GHG) emissions. The platform can be used to benchmark the performance of one building or a portfolio of buildings, all in a secure online environment. It can be used for buildings of all types – whether they're industrial, commercial, institutional, multi-unit residential or social housing.

Having all the information that was compiled during the Race to Reduce in one central, accessible location will take on increasing importance as energy-related reporting requirements spread to Ontario's commercial building sector – something broader public sector organizations have had to do since July 1, 2013, when they were required to submit and publish their first annual energy use and GHG report, as per O. Reg. 397/11.

CREDIT: Photo courtesy of Oxford Properties Group



The IESO's Toronto office is located at 120 Adelaide Street West, a highly energy-efficient building within Oxford Properties' portfolio and one of the winners of the Race to Reduce.

CREDIT: Photo courtesy of Simple Energy

The Ghosal family participated in the Community Energy Challenge, a social benchmarking program delivered by Milton Hydro and Simple Energy designed to encourage behaviour-based energy conservation results.

Competition is certainly not limited to the commercial sector. A growing number of residential customers are learning that it pays to pay attention to energy consumption. With the proliferation of real-time (or near-real-time) data related to other aspects of day-to-day living, it's no wonder electricity consumption is coming under increased scrutiny. Whether you're measuring progress towards health goals with a physical activity tracker, avoiding traffic with a GPS device, monitoring your home security with a wireless alarm system, or viewing yesterday's electricity usage at your home, the common thread is data – and the information it provides.

On a societal level, our access to data is unprecedented. It offers the promise of intelligence. Engaged electricity consumers can monitor a broad array of variables, not just about their own consumption but about conditions on the power system as a whole. In some cases, they can even compare themselves to their neighbours to see who runs the more energy-efficient household. This information, in turn, has led to better decision making about when and how to use electricity.

With a broad mandate to enable innovation in electricity conservation and demand management (CDM), the IESO's Conservation Fund supports work in the residential arena as well as the industrial and commercial space. With an annual budget of $9.5 million and a program management approach that's coordinated with other funding bodies and industry experts, the Conservation Fund and its projects continue to influence the evolution of CDM efforts across Ontario.

One of the most successful of these efforts is residential social benchmarking, the goal of which is to cost-effectively reduce total residential electricity consumption by providing consumers with information-based tools that enable them to compare their home's energy performance to that of another home or group of homes. Social benchmarking was identified in the government's 2013 Long-Term Energy Plan, as well as its 2014 conservation discussion document, Conservation First: A renewed vision for energy conservation in Ontario, as an idea with great potential.

Initially, three local distribution companies (LDCs) took part in separate projects testing separate concepts. Along with their private sector partners – Opower and Simple Energy – Hydro One, Horizon Utilities and Milton Hydro enrolled 110,000 customers in three unique benchmarking projects. To address Ontarians' varying access to technology, as well as the variety of approaches that can motivate residential conservation behaviour, several service approaches were tested. Each project was designed to leverage electricity consumption data and motivate measureable changes in consumption behaviour.

While final, verified results are not yet available, early results showed sufficient promise that more than 20 LDCs included social benchmarking as one element of their respective CDM plans under the 2015-2020 Conservation First Framework.

ieso

New players, new technologies and new market mechanisms are transforming the electricity sector

Operating for Today while Preparing for Tomorrow

As in many jurisdictions, the IESO and its industry partners are dealing with the confluence of several simultaneous developments related to how electricity is produced, transported and consumed.

On the supply side, significant investments are being made in renewable resources, both transmission-connected and distribution-connected. The growth in distributed energy resources is coming under increasing scrutiny as system operators and local utilities address the complexities associated with facilitating and managing two-way flows of electricity on transmission and distribution lines that were designed for one-way flows. Adding to the challenge is the need for re-investment as the system ages.

The IESO now manages more than 25,000 contracts worth in excess of $61 billion in private investment. Under currently directed procurements and other procurement initiatives, over 2016 the IESO expects to start managing more than 1,000 additional contracts for renewable resources, including a large number of potentialmicroFIT contracts, and potential Energy from Waste projects. Both the IESO andits counterparts expect the IESO's contract management teams to administer all generation, conservation, demand response, ancillary service and capacity contracts ina consistent and fair fashion, respecting the obligations arising from these contractual relationships.

On the demand side, electricity consumers are becoming more engaged — an engagement that's being enabled by a broad range of emerging technologies that allow them to monitor, control and change their energy consumption behaviour. There's a wealth of energy data to be leveraged, and many new players have developed products, services and business models premised on the intelligence that big (and small) data can offer.

And then there's the market through which supply and demand are optimized. While the existing market design has generally served Ontario well for the past 13 years, and has enabled the integration and reliable management of all the new forms of supply, there is room for improvement. →

Conestoga Cold Storage will be providing one megawatt of demand response in the DR Pilot, curtailed through the automated modulation of refrigeration equipment temperature, lighting and other plant load.

CREDIT: Photo by David Briggs

LEVERAGING DEMAND-SIDE RESOURCES

January 1, 2015, marked the start of the IESO's expanded mandate. The IESO is now responsible for 20-year planning outlooks as well as real-time operations – and every timeframe in between. In an effort to ensure the continued reliability of Ontario's power system, and the efficiency of the wholesale market in which the price of electricity is set, the IESO took several important steps in 2015 to prepare the province for the future.

One such step was the further integration of demand-side resources. Over the past few years, the IESO has made a concerted effort to broaden the role of demand-side participants in meeting Ontario's evolving energy needs. One of the most effective ways is through demand response (DR), which involves end-users changing (usually reducing and/or shifting) their electricity consumption in response to market prices and/or signals from the system operator, whether directly or through an aggregator.

Transitioning DR from a contract-based approach to a market-based mechanism began with the conversion of the DR3 program to the Capacity-Based Demand Response program. But that was just the first step of a multi-phase process that could evolve into a broader capacity auction through which demand-side resources would have the opportunity to compete against other capacity providers.

With active engagement from across the sector, the IESO conducted its first-ever annual DR auction in December 2015 (see pages 25-26). This was another competitive process through which demand-side resources were selected to be available to reduce their electricity consumption in response to changing grid conditions. The auction successfully secured approximately 400 megawatts (MW) for the summer and winter seasons at clearing prices that are lower than previous DR programs. DR auctions will now run every year, providing an ongoing opportunity for new entrants to participate and compete against existing suppliers, and ensuring the best value for electricity consumers.

The auction also lays the foundation to meet the government's objective – laid out in the 2013 Long-Term Energy Plan – for DR to meet 10 percent of Ontario's peak demand by 2025. In undertaking the changes to DR, the IESO worked closely and collaboratively with the sector to evolve the current market and adapt to future needs, an effective model that will be used to implement other market development initiatives.

In 2015, the IESO ran a competitive process to procure up to 80 MW of DR through an innovative pilot program intended to yield some valuable new insights into how demand-side resources behave. Eligible respondents included medium to large wholesale and embedded electricity consumers as well as DR aggregators representing smaller industrial, commercial, institutional and/or residential consumers.

The successful proponents – a mix of existing and new entrants to the market – include five companies representing 20 projects ranging from one to 35 megawatts, located in communities around the province. Once they are in service, these projects will yield a better understanding of DR resources' ability to provide real-time responses to changes in demand during the day.

MICROGRIDS BRING THE PROMISE OF TOMORROW CLOSER

Americans are often known for their bold, entrepreneurial, "go big or go home" attitude. In the case of an initiative underway in Philadelphia, that attitude is propelling a highly ambitious, forward-looking energy project that many industry observers – including some here in Ontario – are watching with great interest.

The Navy Yard is a 1,200-acre urban development with a centrally located waterfront business campus that is home to more than 12,000 employees and 152 companies in the office, industrial, manufacturing, and research and development sectors. It is intended to serve as a catalyst for energy innovation and a model for sustainability.

Announced in 2013 and expected to be fully operational in 2016, the Navy Yard microgrid is part of the community's 10-year energy master plan. With the support of major utility partners, as well as technology providers, the plan includes alternative and clean power generation and storage projects; dynamic time-of-use tariffs; energy efficiency and demand reduction incentives – all of which directly benefit the individual electric customers of the Navy Yard. The plan also includes the potential to provide access to regional energy markets managed by PJM Interconnection, a regional transmission operator whose functions are similar to those of the IESO.

At its simplest, a microgrid is an integrated, self-contained network of assets on a smaller scale than those found on the bulk power system. Microgrids generally comprise small-scale generation (often wind, solar or gas); end-use consumers that may also offer other services including conservation, energy efficiency and demand response; energy storage devices; stations, lines, transformers and related infrastructure; plus sophisticated monitoring and control systems. A microgrid can usually operate in one of two modes: connected to the electricity system or disconnected from the grid, in what's known as island mode.

In Ontario, microgrids are increasingly being developed by LDCs and their tech partners, and, in some cases, by non-utility third parties, for their ability to increase local resilience and support added reliability, especially during destructive and damaging storms. In addition, IESO analysis indicates that for remote communities where it is not economically feasible to connect to the grid, renewable generation that is integrated into community microgrids can help to avoid diesel generation.

Microgrids may also provide an opportunity for price arbitrage, through which energy may be withdrawn from the grid and stored when prices are low and reinjected when prices are high. From the system operator's perspective, microgrids have the potential to regulate variations in voltage, frequency and power quality. And finally, they may also allow costly investments in other large-scale assets to be deferred.

Pilot projects and other tests are underway in many parts of the province, as LDCs as diverse as PowerStream, Hydro Ottawa, Veridian Connections, Oshawa PUC, Hydro One Remote Communities, Guelph Hydro and others seek to test microgrids' capabilities and capitalize on their inherent promise.

POTENTIAL BENEFITS AND OPPORTUNITIES OF COMMUNITY MICROGRIDS*

Resilience

Mitigating the impact of power outages due to extreme weather events

Reliability

Support for overall electrical grid reliability and maximum customer "up time" can be offered through microgrids, at a cost

Sustainable Energy

Increased ability to connect and manage intermittent local renewable generation resources, such as solar or wind with energy storage

Economic

Leveraging on-site distributed generation may have the potential to reduce customer costs and boost overall system efficiency

Grid Support

Provision of system ancillary services if controlled, owned or operated by utility or system operator

Asset Optimization

Ability to connect and optimize diverse distributed energy resources as an integrated system with local control

* Courtesy of the MaRS Advanced Energy Centre, www.marsdd.com/wp-content/uploads/2014/11/Future-of-Microgrids.pdf

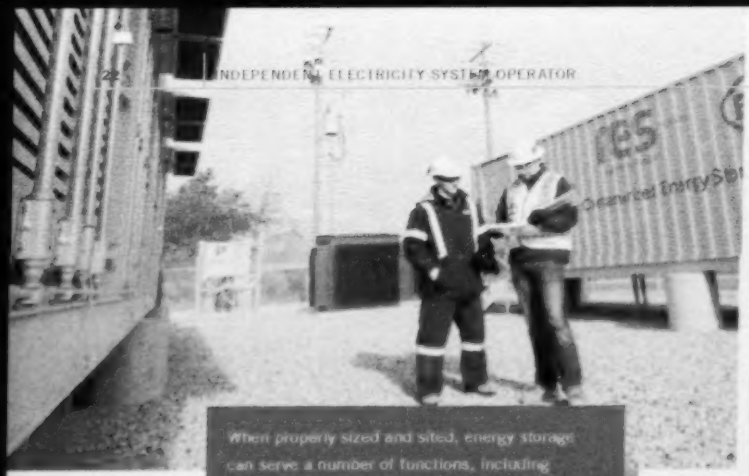
Demand response is expected to meet

10%

of Ontario's electricity needs by 2025.

For reliability purposes, two timeframes are of particular interest to the IESO: the morning ramp-up, when demand for electricity accelerates quickly, and the ramp-down period later in the day, when demand slackens following the afternoon or evening peaks. The IESO will evaluate the pilot projects' performance to determine if DR can meet these requirements, which could avoid the need to dispatch generation to meet demand.

Leveraging the inherent responsiveness of electricity customers, and capturing the value of existing assets and infrastructure, will support the continued evolution of Ontario's market and system during this period of industry-wide refocusing and reinvention. The IESO hopes to expand residential DR going forward, in an effort to amplify and expand the role that retail customers can play in supporting reliability and efficiency.



When properly sized and sited, energy storage can serve a number of functions, including frequency regulation, a contracted service provided by RES Canada's battery storage facility in Central Strathroy.

STORAGE AND FLEXIBILITY

Another technology that could compete to meet capacity and other system needs is energy storage, often described as the Swiss Army knife of energy resources because of its multifunctional nature. Storage can serve a variety of functions and deliver a range of benefits, depending on the technology used and the location of the storage resource.

Each storage technology has different operating characteristics but across the various applications, storage has the potential to reduce congestion on transmission and distribution networks, allowing utilities to defer, or even avoid, expensive system upgrades; smooth out fluctuations of variable resources and bring added stability to the grid; provide reliability services that support voltage and frequency on the system; and absorb surplus generation when demand for electricity is low, re-injecting it into the system when demand is higher.

To better understand the role(s) storage could play in the future, the IESO undertook a two-phase procurement of storage resources. Once operational, phase one projects are expected to provide ancillary services, including frequency regulation and/or reactive support and voltage control, which are needed to maintain voltages and support the flow of electricity along power lines. By contrast, the projects selected in the second phase of the initiative are expected to have the ability to store energy during times when demand for electricity and prices are low and re-inject it into the grid during periods of greater need and higher prices.

The IESO is not alone in exploring the potential of storage in Ontario. Many of the planned storage projects will be connected to the distribution system, where they may be managed or controlled by one of Ontario's 70+ local distribution companies.

DEFENDING AGAINST CYBER THREATS

History has shown that when you're trying to protect your most valuable assets, you want to put up strong walls and have a good view of the surrounding landscape. This thinking seems to apply whether the assets are castles and fortresses, or systems and data.

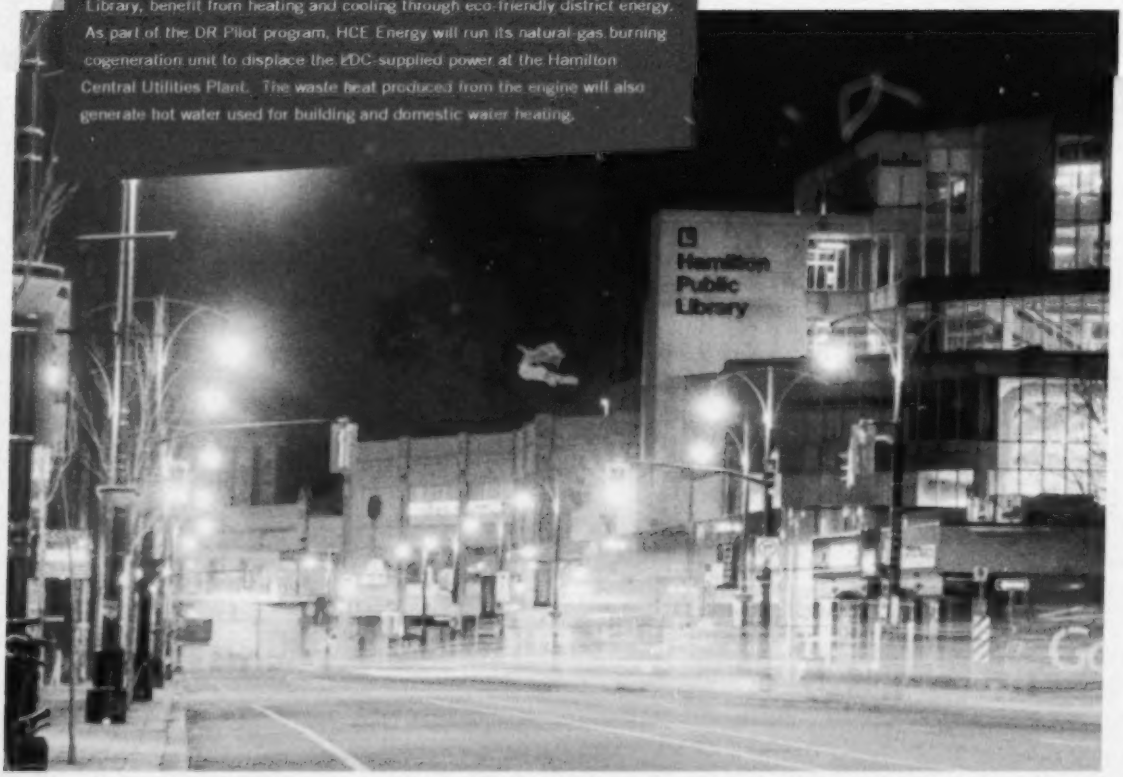
To protect North America's integrated power system against emerging cyber threats, the North American Electric Reliability Corporation (NERC) surveyed the digital landscape and introduced reliability standards related to critical infrastructure protection. Now in their fifth iteration, these standards are known as CIP Version 5, or CIP5, and cover a range of cyber subjects, including security awareness, access controls, employee and contractor training, incident reporting and recovery planning.

In general terms, reliability standards are obligations imposed on certain market participants that own and/or operate infrastructure connected to North America's bulk power system, including system operators, transmission operators, generators, transmitters, distributors, large consumers and others. Reliability standards define the reliability requirements for planning, designing, building, operating and securing the high-voltage power system.

Over the past few years, the IESO has worked closely with market participants and other stakeholders – including national and international security agencies – to deepen the sector's understanding of cyber risks. The interconnected nature of the sector, and its physical and cyber assets, requires ongoing collaboration to achieve a holistic, consistent approach to securing Ontario's electricity infrastructure.

As the variety, volume and velocity of cyber threats continue to ramp up, organizations across North America are investing significant resources to assess and strengthen the measures taken to protect not just their information but also their operations and reputations.

With CIP5 standards coming into force on July 1, 2016, the IESO has invested in new processes, controls and technologies to ensure the company is compliant with the new standards. To support the sector as the in-force date approaches, the IESO also convened the CIP Standards Transition Forum, a peer-to-peer forum designed to provide all attendees with an opportunity to freely and confidentially discuss transition issues, and minimize the risk of cyber incidents.



Both private and public buildings in Hamilton, including the Hamilton Public Library, benefit from heating and cooling through eco-friendly district energy. As part of the DR Pilot program, HCE Energy will run its natural-gas burning cogeneration unit to displace the EDC-supplied power at the Hamilton Central Utilities Plant. The waste heat produced from the engine will also generate hot water used for building and domestic water heating.

MARKET DEVELOPMENT PRINCIPLES

Working closely with the stakeholder community, the IESO has identified the need to evolve Ontario's electricity market to address known inefficiencies and lay the foundation for a more dynamic market that better serves the province going forward.

Meeting future needs efficiently – with a level playing field for all resources, whether providing energy, capacity, ancillary services, or operational flexibility – is one of the primary objectives spurring market development initiatives. And the province's current strong supply situation makes this an ideal time to consider market changes.

In working with its stakeholders, the IESO's market development initiatives will be underpinned by clear principles:

1. **Stability**
   Eliminate the need for ongoing "band-aid" solutions by addressing underlying design issues and providing enduring solutions
2. **Transparency**
   Work together with our stakeholders to continue to evolve the market in a practical manner
3. **Flexibility**
   Enhance ability to realize efficiencies and provide new opportunities for participants to help meet evolving system needs
4. **Efficiency**
   Reduce out-of-market payments and focus on delivering efficient outcomes through transparent competition
5. **Certainty**
   Provide clear, efficient price signals through stable, long-term, market-based mechanisms

DR AUCTION EXPANDS CONSUMER ROLE IN THE MARKET

Through the DR auction, the IESO procured approximately

400 MW

of demand response from a mix of aggregators and direct providers.

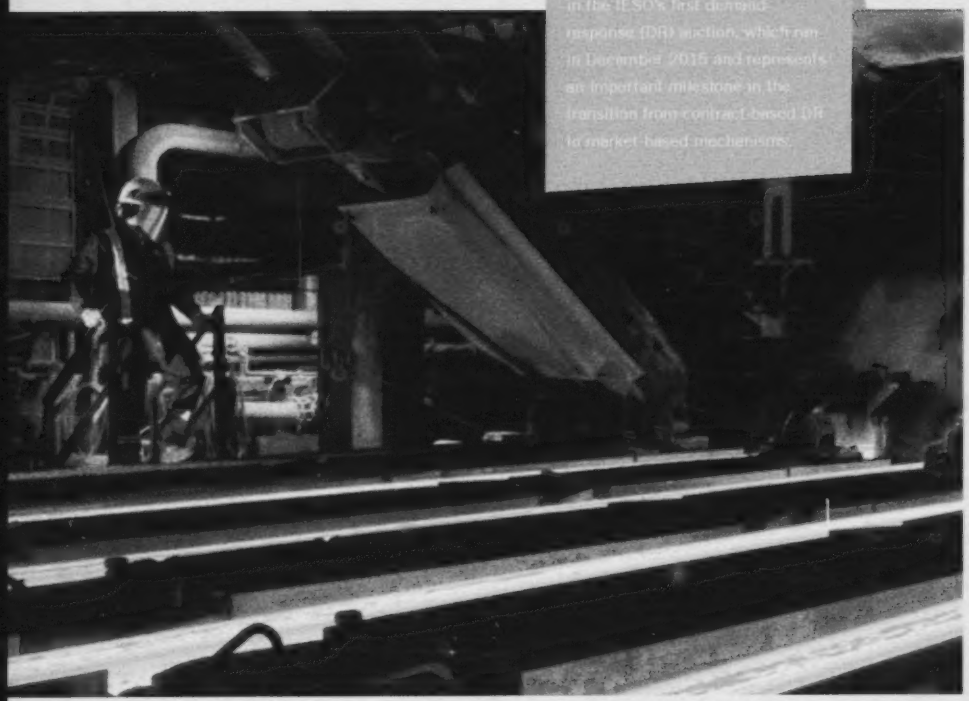
Ontario's electricity consumers already play an important role in helping to meet the province's need for flexible, responsive resources, but the mechanism through which some of their contributions are managed has taken on a new form.

The IESO announced the results of the province's first demand response (DR) auction in December 2015. DR involves changes in electricity consumption by end-use customers in response to high market prices or other signals, and is an essential element of Ontario's diverse supply mix. The auction was just the latest phase in the ongoing evolution of Ontario's electricity market and system – and marks an important transition from a multi-year, contract-based mechanism for procuring DR to an annual competitive, market-based solution. The culmination of several years of preparation and collaboration by the IESO, market participants and other stakeholders, the auction is a critical milestone in the evolution of Ontario's power system.

Like many other system operators – not just in North America but around the world – the IESO wants to leverage the inherent flexibility in consumption behaviour to meet Ontario's evolving energy needs. Competitive market mechanisms have proven to be a transparent and cost-effective way to select the least expensive DR providers while ensuring that all providers are held to the same performance obligations.

Seventeen organizations registered as DR auction participants in the months leading up to the auction. This diverse group of proponents included high-volume transmission-connected industrial, commercial and institutional users, and smaller consumers whose facilities are connected to low-voltage distribution systems and whose DR contributions are managed by an aggregator.

CREDIT: Photo courtesy of Gerdau



Gerdau is one of the participants in the IESO's first demand response (DR) auction, which ran in December 2015 and represents an important milestone in the transition from contract-based DR to market-based mechanisms.

Demand response provides much needed **flexibility to respond to changing system conditions** and needs.

Through the auction, demand-side resources were selected to be available to reduce their electricity consumption, as needed, during the summer of 2016 and winter of 2016/17 commitment periods. The successful auction participants include three aggregators, each of which will manage an integrated virtual network of smaller consumers, and four direct providers capable of modulating their respective energy consumption on demand. Total DR procured in each of the two periods is approximately 400 MW, which is roughly equivalent to the installed capacity of a peaking generator.

By reducing the output required from existing generators, and limiting the need to build new infrastructure, DR can lessen the overall impact of the electricity system on the environment – an important consideration as the province moves even further towards a lower carbon future.

For participants, funds earned through the auction are a welcome source of revenue, enhancing the competitiveness of Ontario firms. In addition, the auction provides companies with a financial incentive to consider making changes to their operations and processes in order to become more efficient. It's a positive development for electricity consumers, too. They now have access to a cheaper, cleaner resource and suppliers that can monetize their ability to respond to system needs in real time.

The IESO spent much of 2015 meeting with stakeholders to design a DR product that could be integrated into the real-time energy market. This process involved representatives from across the electricity sector, including large industrial/commercial/institutional consumers, aggregators, generators, energy service providers, municipalities and local distribution companies, coming together to identify options.

Designing, testing and implementing the auction – with all the required changes to market rules, market manuals and market tools – in a compressed period of time took commitment on all sides. Employees from across the IESO, with specialists in market development, operations, settlements, customer relations, finance and IT (among others), came together with the industry to collaboratively explore the potential impacts of different solutions. The objective of these discussions was to identify a market design, and market processes, that would deliver desired outcomes in a timely, transparent and cost-effective manner.

Through a competitive RFP process, experts at the University of Waterloo were engaged to help design the auction engine, a computational tool that processes the offers submitted by auction participants, selects the most economical offers based on predefined parameters or constraints, and then determines the auction results, including the DR auction clearing price and quantity.

Executive Leadership Team, Board of Directors and Advisory Committees to the Board

IESO ENGAGEMENT PRINCIPLES

1. Analyze Opportunities for Engagement
2. Ensure Inclusive and Adequate Representation
3. Provide Effective Communication and Information
4. Promote Openness and Transparency
5. Provide Effective Facilitation
6. Communicate Outcomes
7. Measure Satisfaction

EXECUTIVE LEADERSHIP TEAM

Bruce Campbell
President and Chief Executive Officer

JoAnne Butler
Vice-President, Market and Resource Development

Michael Lyle
Vice-President, Planning, Law and Aboriginal Relations

Kimberly Marshall
Vice-President, Corporate Services and Chief Financial Officer

Doug Thomas
Vice-President, Information and Technology Services and Chief Information Officer

Kim Warren
Vice-President, Market and System Operations and Chief Operating Officer

Terry Young
Vice-President, Conservation and Corporate Relations

BOARD OF DIRECTORS

Tim O'Neill
Chairman of the Board
Retired from BMO Financial Group, where he served as Executive Vice-President and Chief Economist; President of O'Neill Strategic Economics

Bruce Campbell
President and Chief Executive Officer
Independent Electricity System Operator

Cynthia Chaplin
Director
Former Vice-Chair of the Ontario Energy Board

Murray Elston
Director
Former Chair of the Electricity Distribution Panel; former President of the Canadian Nuclear Association; former Ontario Minister of Health

Susanna Han
Director
Chief Financial Officer LiUNA Local 183

Ronald L. Jamieson
Director and Chair, Audit Committee
Retired from BMO Financial Group, where he was Senior Vice-President, Aboriginal Banking; Director, Nuclear Waste Management Organization and Denendeh Investments Inc.; Member, Order of Canada; Appointee, Order of Ontario

Margaret Kelch
Director and Chair, Human Resources and Governance Committee
Chair of the Conservation Committee, Nature Conservancy of Canada; former Board member of the Electrical Safety Authority and Guelph Hydro Electric Systems Inc.

Bruce Lourie
Director
President of Ivey Foundation; Director of the Consultative Group on Biological Diversity (San Francisco)

William Museler
Director
Former President and Chief Executive Officer of the New York Independent System Operator

Deborah S. Whale
Director
Vice-President, Clovermead Farms; Vice-Chair of Ontario Farm Products Marketing Commission

Carole Workman
Director
Chair of Ottawa Hospital Board of Directors; Board member of Allstate Insurance of Canada; former Director of Hydro Ottawa and several other organizations

STAKEHOLDER ADVISORY COMMITTEE (SAC)

Brian Bentz (Chair)
President and Chief Executive Officer
PowerStream
REPRESENTING:
Distributors and Transmitters

Steve Baker
President
Union Gas Limited
REPRESENTING:
Related Businesses/ Services

John Beaucage
Principal
Counsel Public Affairs Inc.
REPRESENTING:
Ontario Communities

Darlene Bradley
Director, Technical Services
Hydro One Networks Inc.
REPRESENTING:
Distributors and Transmitters

Jack Burkom
Senior Vice President, Commercial Development
Brookfield Energy Marketing Inc.
REPRESENTING:
Related Businesses/ Services

David Butters
President and Chief Executive Officer
Association of Power Producers of Ontario
REPRESENTING:
Generators

Jared Donald
President
Synergist Energy
REPRESENTING:
Generators

Julie Girvan
Consumers Council of Canada
REPRESENTING:
Consumers

Valerie Helbronner
Partner
Torys LLP - Infrastructure and Energy Practice
REPRESENTING:
Generators

Geoff Lupton
Director, Energy Fleet and Traffic
City of Hamilton
REPRESENTING:
Ontario Communities

Rob Mace
President and Chief Executive Officer
Thunder Bay Hydro Electricity Distribution Inc.
REPRESENTING:
Distributors and Transmitters

Mark Schembri
Vice President, Supermarket Systems and Store Maintenance
Loblaw Properties Limited
REPRESENTING:
Consumers

James Scongack
Vice President, Corporate Affairs
Bruce Power
REPRESENTING:
Generators

Ersilia Serafini (Vice Chair)
President
Summerhill
REPRESENTING:
Ontario Communities

Paul Shervill
Vice President, Strategic Initiatives
Rodan Energy
REPRESENTING:
Related Businesses/ Services

Adam White
President
Association of Major Power Consumers of Ontario
REPRESENTING:
Consumers

Todd Wilcox
Chief Operating Officer
North Bay Hydro
REPRESENTING:
Distributors and Transmitters

Terry Young
Vice President, Conservation and Corporate Relations
Independent Electricity System Operator
REPRESENTING:
IESO

TECHNICAL PANEL (TP)

Chuck Farmer (Chair)
Director, Conservation and Demand Planning
Independent Electricity System Operator

Shelly Cunningham
Senior Vice-President, Engineering Services
PowerStream Inc.
REPRESENTING:
Distributors

David Dent
Manager, Strategic and Power Markets
Union Gas Limited
REPRESENTING:
Natural Gas

Barbara Ellard
Director, Markets
Independent Electricity System Operator
REPRESENTING:
IESO

Paul Huebener
Managing Director
DIF Management
REPRESENTING:
Financial Industry

Brian Kelly
Manager, Market Affairs
TransCanada Energy Ltd.
REPRESENTING:
Generators

Robert Lake
REPRESENTING:
Residential Consumers

Martin Longlade
REPRESENTING:
Industrial Consumers

Luis Marti
Director, Reliability Studies, Strategy and Compliance
Hydro One Networks
REPRESENTING:
Transmitters

Peter Rowles
Principal
ICF Marbek
REPRESENTING:
Commercial Consumers

Yannick Vennes
Deputy Compliance Officer – Wholesale Markets, Legal Affairs Department
Hydro-Québec Production
REPRESENTING:
Retailers and Wholesalers

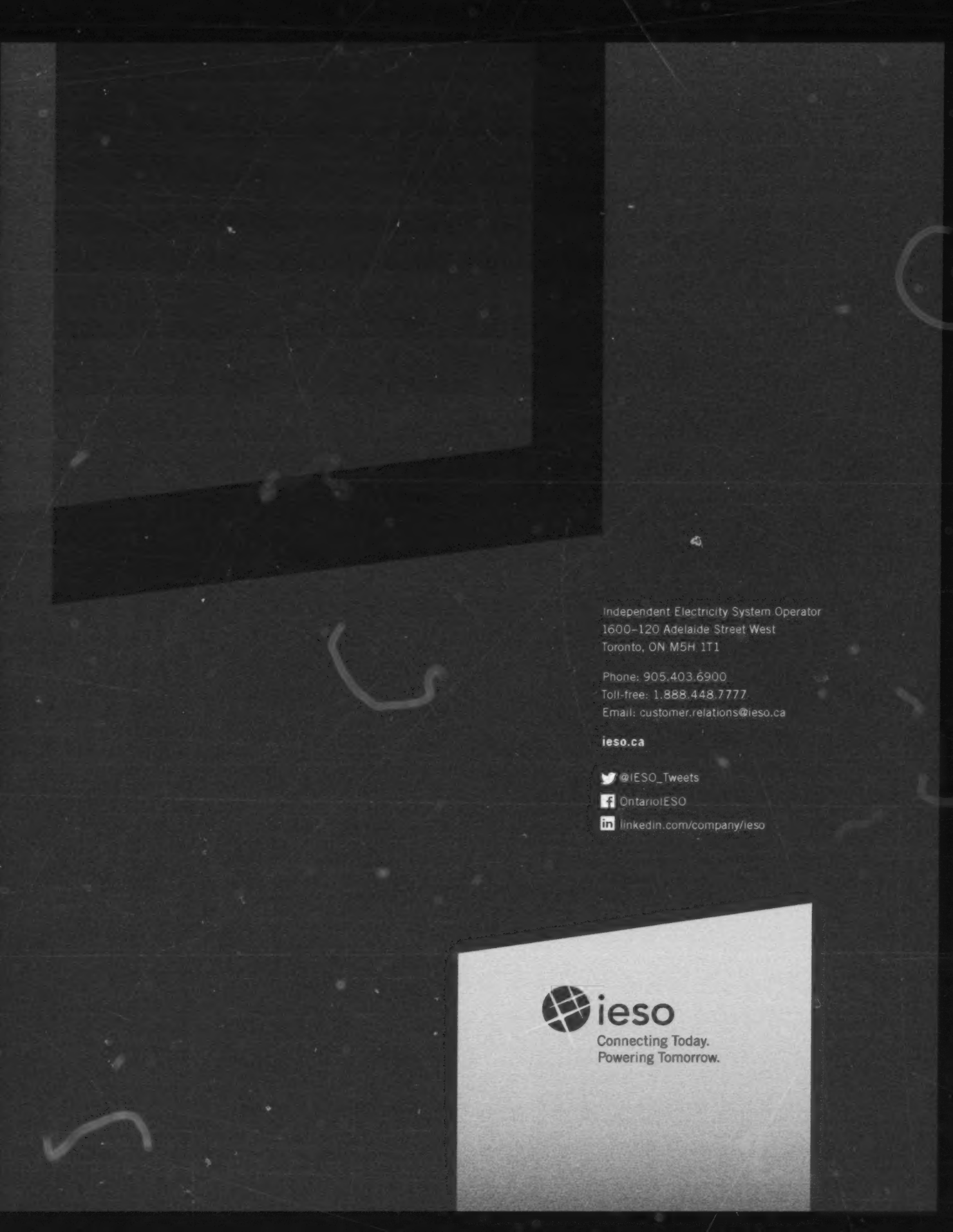
Bill Wilbur
Director, Generation and Revenue Planning
Ontario Power Generation
REPRESENTING:
Generators

ONTARIO ENERGY BOARD LIAISON:

David Brown
Senior Policy Advisor, Wholesale Power Policy, Regulatory Policy Development
Ontario Energy Board

TECHNICAL PANEL SECRETARIAT:

John Rattray
Susan Harrison



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Powering Tomorrow.

2015 ANNUAL REPORT

Financial Statements

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Management Report

Management's Responsibility for Financial Reporting

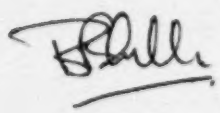
The accompanying financial statements of the Independent Electricity System Operator are the responsibility of management and have been prepared in accordance with Canadian public sector accounting standards. The significant accounting policies followed by the Independent Electricity System Operator are described in the Summary of Significant Accounting Policies contained in Note 2 in the financial statements. The preparation of financial statements necessarily involves the use of estimates based on management's judgement, particularly when transactions affecting the current accounting period cannot be finalized with certainty until future periods. The financial statements have been prepared within reasonable limits of materiality and in light of information available up to March 9, 2016.

Management maintained a system of internal controls designed to provide reasonable assurance that the assets were safeguarded and that reliable information was available on a timely basis. The system included formal policies and procedures and an organizational structure that provided for the appropriate delegation of authority and segregation of responsibilities.

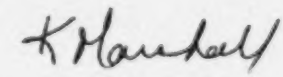
These financial statements have been examined by KPMG LLP, a firm of independent external auditors appointed by the Board of Directors. The external auditors' responsibility is to express their opinion on whether the financial statements are fairly presented in accordance with generally accepted accounting principles in Canada. The Auditors' Report, which follows, outlines the scope of their examination and their opinion.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR

On behalf of management,



Bruce Campbell
President, Chief Executive Officer
Toronto, Canada
March 9, 2016



Kimberly Marshall
Vice-President, Corporate Services
and Chief Financial Officer
Toronto, Canada
March 9, 2016

Independent Auditors' Report

To the Board of Directors of the Independent Electricity System Operator (IESO)

We have audited the accompanying financial statements of IESO, which comprise the statement of financial position as at December 31, 2015, the statements of operations and accumulated deficit, remeasurement gains and losses, change in net debt and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of IESO as at December 31, 2015, and its results of operations and the changes in its net debt and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants

March 9, 2016
Waterloo, Canada

Statement of Financial Position

As at (in thousands of Canadian dollars)	December 31, 2015	December 31, 2014
	$	$
FINANCIAL ASSETS		
Cash and cash equivalents	14,715	31,340
Accounts receivable	33,199	23,054
Long-term investments **(Note 3)**	37,318	33,979
TOTAL FINANCIAL ASSETS	**85,232**	**88,373**
LIABILITIES		
Accounts payable and accrued liabilities **(Note 4)**	48,868	51,163
Accrued interest on debt	315	364
Rebates due to market participants **(Note 5)**	9,595	–
Debt **(Note 6)**	90,000	129,000
Accrued pension liability **(Note 7)**	36,062	36,943
Accrued liability for employee future benefits other than pension **(Note 7)**	84,501	79,914
TOTAL LIABILITIES	**269,341**	**297,384**
NET DEBT	**(184,109)**	**(209,011)**
NON-FINANCIAL ASSETS		
Net tangible capital assets **(Note 8)**	103,716	99,549
Prepaid expenses	6,197	6,170
TOTAL NON-FINANCIAL ASSETS	**109,913**	**105,719**
ACCUMULATED SURPLUS/(DEFICIT)		
Accumulated deficit from operations **(Note 5)**	(81,854)	(109,654)
Accumulated remeasurement gains	7,658	6,362
ACCUMULATED DEFICIT	**(74,196)**	**(103,292)**

On behalf of the Board:

Tim O'Neill
Chair
Toronto, Canada

Ron Jamieson
Director
Toronto, Canada

Statement of Operations and Accumulated Deficit

For the year ended December 31 (in thousands of Canadian dollars)	2015 Budget $	2015 Actual $	2014 Actual $
IESO CORE OPERATIONS			
System fees	181,200	180,504	160,968
Other revenue **(Note 9)**	3,000	5,377	6,272
Interest and investment income	1,000	1,430	2,798
Core operation revenues	**185,200**	**187,311**	**170,038**
Compensation and benefits	(105,212)	(104,994)	(115,225)
Professional and consulting	(22,117)	(21,555)	(19,101)
Operating and administration	(33,661)	(34,911)	(34,352)
Core operating expenses	**(160,990)**	**(161,460)**	**(168,678)**
Amortization	(18,700)	(17,933)	(16,583)
Net interest	(1,388)	(1,610)	(832)
Core expenses	**(181,078)**	**(181,003)**	**(186,093)**
IESO-OPA amalgamation expenses	–	–	(10,883)
Core operations annual surplus/(deficit)	**4,122**	**6,308**	**(26,938)**
MARKET SANCTIONS AND PAYMENT ADJUSTMENTS			
Market sanctions and payment adjustments	**–**	**6,021**	**2,687**
Compensation and benefits	(2,984)	(3,094)	(2,554)
Professional and consulting	(1,515)	(1,351)	(1,677)
Operating and administration	(73)	(114)	(132)
Customer education and market enforcement expenses	**(4,572)**	**(4,559)**	**(4,363)**
Market sanctions and payment adjustments annual surplus/(deficit)	**(4,572)**	**1,462**	**(1,676)**
SMART METERING ENTITY			
Smart metering charge	**45,207**	**46,215**	**45,735**
Compensation and benefits	(3,463)	(2,607)	(2,882)
Professional and consulting	(19,242)	(14,902)	(16,169)
Operating and administration	(2,386)	(4,200)	(2,958)
Smart metering operating expenses	**(25,091)**	**(21,709)**	**(22,009)**
Amortization	(3,716)	(3,524)	(4,543)
Net interest	(3,048)	(952)	(1,317)
Smart metering expenses	**(31,855)**	**(26,185)**	**(27,869)**
Smart metering entity annual surplus	**13,352**	**20,030**	**17,866**
ANNUAL SURPLUS/(DEFICIT)	**12,902**	**27,800**	**(10,748)**
ACCUMULATED DEFICIT FROM OPERATIONS, BEGINNING OF PERIOD	(109,654)	(109,654)	(98,906)
ACCUMULATED DEFICIT FROM OPERATIONS, END OF PERIOD	**(96,752)**	**(81,854)**	**(109,654)**

Statement of Remeasurement Gains and Losses

For the year ended December 31 (in thousands of Canadian dollars)	2015	2014
	Actual $	Actual $
ACCUMULATED REMEASUREMENT GAINS, BEGINNING OF PERIOD	**6,362**	**4,144**
UNREALIZED GAINS ATTRIBUTABLE TO:		
Foreign exchange – other	515	591
Portfolio investments **(Note 3)**	1,372	2,622
AMOUNTS RECLASSIFIED TO THE STATEMENT OF OPERATIONS:		
Foreign exchange – other	(591)	(178)
Portfolio investments	–	(817)
NET REMEASUREMENT GAINS FOR THE PERIOD	**1,296**	**2,218**
ACCUMULATED REMEASUREMENT GAINS, END OF PERIOD	**7,658**	**6,362**

Statement of Change in Net Debt

For the year ended December 31 (in thousands of Canadian dollars)	2015 Budget $	2015 Actual $	2014 Actual $
ANNUAL SURPLUS/(DEFICIT)	**12,902**	**27,800**	**(10,748)**
CHANGE IN NON-FINANCIAL ASSETS			
Acquisition of tangible capital assets	(29,395)	(25,624)	(24,575)
Amortization of tangible capital assets	22,416	21,457	21,125
Change in prepaid expenses	–	(27)	(1,356)
TOTAL CHANGE IN NON-FINANCIAL ASSETS	**(6,979)**	**(4,194)**	**(4,806)**
NET REMEASUREMENT GAINS FOR THE PERIOD	1,023	1,296	2,218
CHANGE IN NET DEBT	**6,946**	**24,902**	**(13,336)**
NET DEBT, BEGINNING OF PERIOD	(209,011)	(209,011)	(195,675)
NET DEBT, END OF PERIOD	**(202,065)**	**(184,109)**	**(209,011)**

Statement of Cash Flows

For the year ended December 31 (in thousands of Canadian dollars)	2015	2014
	$	$
OPERATING TRANSACTIONS		
Change in accumulated deficit		
Annual surplus/(deficit)	27,800	(10,748)
	27,800	(10,748)
Changes in non-cash items:		
Amortization	21,457	21,125
Pension expense	11,970	13,777
Other employee future benefits expense	6,901	8,166
Change in fair value of long-term investments	–	(1,100)
	40,328	41,968
Changes in non-cash balances related to operations:		
Change in accounts payable and accrued liabilities	(775)	(3,124)
Change in accounts receivable	(10,145)	1,870
Change in rebates due to market participants	9,595	(25,755)
Change in prepaid expenses	(27)	(1,356)
	(1,352)	(28,365)
Other:		
Contribution to pension fund	(12,851)	(11,973)
Payment of employee future benefits	(2,314)	(2,321)
	(15,165)	(14,294)
Cash provided by/(applied to) operating transactions	**51,611**	**(11,439)**
CAPITAL TRANSACTIONS		
Acquisition of tangible capital assets	(25,624)	(24,575)
Change in accounts payable & accrued liabilities	(1,569)	(152)
Cash applied to capital transactions	**(27,193)**	**(24,727)**
INVESTING TRANSACTIONS		
Sale/(purchase) of long-term investments	(1,967)	727
Cash provided by/(applied to) investing transactions	**(1,967)**	**727**
FINANCING TRANSACTIONS		
Issue/(retire) debt	(39,000)	4,800
Cash provided by/(applied to) financing transactions	**(39,000)**	**4,800**
INCREASE IN CASH AND CASH EQUIVALENTS	(16,549)	(30,639)
CASH AND CASH EQUIVALENTS – BEGINNING OF PERIOD	31,340	61,566
Unrealized foreign exchange gains/(losses) for the period	(76)	413
CASH AND CASH EQUIVALENTS – END OF PERIOD	**14,715**	**31,340**

Notes to Financial Statements

1. NATURE OF OPERATIONS

a) The Independent Electricity System Operator (IESO) is a not-for-profit, non-taxable, corporation established pursuant to Part II of the *Electricity Act, 1998*. The predecessor Independent Electricity System Operator and the Ontario Power Authority (OPA) were amalgamated by statute effective on January 1, 2015, and continued as the Independent Electricity System Operator. As set out in the *Electricity Act, 1998*, the IESO operates pursuant to a licence granted by the Ontario Energy Board (OEB). The amalgamation was effected pursuant to Bill 14, *Building Opportunity and Securing Our Future Act (Budget Measures), 2014*, which received Royal Assent on July 24, 2014. Schedule 7 of the Bill amended the *Electricity Act, 1998*, by amalgamating the two predecessor corporations and by continuing them as the Independent Electricity System Operator. The transitional provision, dealing with corporate matters, provides, among other things, that the predecessor IESO and OPA cease to exist as entities separate from the amalgamated IESO and all their rights, properties and assets become the rights, properties and assets of the amalgamated IESO, as do all outstanding debts, liabilities and obligations of the predecessor IESO and OPA. Schedule 7 of Bill 14 came into force on January 1, 2015. The objects of the IESO as contained in the *Electricity Act, 1998*, and Ontario Regulation 288/14 are as follows:

- to exercise the powers and perform the duties assigned to it under this Act, the regulations, directions, the market rules and its licence;
- to enter into agreements with transmitters to give it authority to direct the operation of their transmission systems;
- to direct the operation and maintain the reliability of the IESO-controlled grid to promote the purposes of this Act;
- to participate in the development by any standards authority of criteria and standards relating to the reliability of the integrated power system;
- to establish and enforce criteria and standards relating to the reliability of the integrated power system;
- to work with the responsible authorities outside of Ontario to co-ordinate the IESO's activities with the activities of those authorities;
- to operate the IESO-administered markets to promote the purposes of this Act;
- to engage in activities related to contracting for the procurement of electricity supply, electricity capacity and conservation resources;
- to engage in activities related to settlements, payments under a contract entered into under the authority of this Act and payments provided for under this Act or the *Ontario Energy Board Act, 1998*;
- to engage in activities in support of the goal of ensuring adequate, reliable and secure electricity supply and resources in Ontario;
- to forecast electricity demand and the adequacy and reliability of electricity resources for Ontario for the short term, medium term and long term;
- to conduct independent planning for electricity generation, demand management, conservation and transmission;
- to engage in activities to facilitate the diversification of sources of electricity supply by promoting the use of cleaner energy sources and technologies, including alternative energy sources and renewable energy sources;
- to engage in activities in support of system-wide goals for the amount of electricity to be produced from different energy sources;

- to engage in activities that facilitate load management;
- to engage in activities that promote electricity conservation and the efficient use of electricity;
- to assist the Board by facilitating stability in rates for certain types of consumers;
- to collect and make public information relating to the short term, medium term and long term electricity needs of Ontario and the adequacy and reliability of the integrated power system to meet those needs; and
- to engage in such other objects as may be prescribed by the regulations.

b) The IESO was designated the Smart Metering Entity (SME) by Ontario Regulation 393/07 under the *Electricity Act, 1998*, on March 28, 2007. The regulation came into effect on July 26, 2007.

The objects of the Smart Metering Entity, as contained in the *Electricity Act, 1998*, are as follows:

- to plan and implement and, on an ongoing basis, oversee, administer and deliver any part of the smart metering initiative as required by regulation under this or any Act or directive made pursuant to sections 28.3 or 28.4 of the *Ontario Energy Board Act, 1998*, and, if so authorized, to have the exclusive authority to conduct these activities;
- to collect and manage and to facilitate the collection and management of information and data and to store the information and data related to the metering of consumers' consumption or use of electricity in Ontario, including data collected from distributors and, if so authorized, to have the exclusive authority to collect, manage and store the data;
- to establish, to own or lease and to operate one or more databases to facilitate collecting, managing, storing and retrieving smart metering data;
- to provide and promote non-discriminatory access, on appropriate terms and subject to any conditions in its licence relating to the protection of privacy, by distributors, retailers and other persons,
  - i. to the information and data referred to above, and
  - ii. to the telecommunication system that permits the Smart Metering Entity to transfer data about the consumption or use of electricity to and from its databases, including access to its telecommunication equipment, systems and technology and associated equipment, systems and technologies
- to own or to lease and to operate equipment, systems and technology, including telecommunication equipment, systems and technology that permit the Smart Metering Entity to transfer data about the consumption or use of electricity to and from its databases, including owning, leasing or operating such equipment, systems and technology and associated equipment, systems and technologies, directly or indirectly, including through one or more subsidiaries, if the Smart Metering Entity is a corporation;
- to engage in such competitive procurement activities as are necessary to fulfill its objects or business activities;
- to procure, as and when necessary, meters, metering equipment, systems and technology and any associated equipment, systems and technologies on behalf of distributors, as an agent or otherwise, directly or indirectly, including through one or more subsidiaries, if the Smart Metering Entity is a corporation;
- to recover, through just and reasonable rates, the costs and an appropriate return approved by the Ontario Energy Board associated with the conduct of its activities; and
- to undertake any other objects that are prescribed by associated regulation.

c) The IESO is required to submit its proposed expenditures, revenue requirements and fees for the coming year to the OEB for review and approval. The submission may be made only with the approval or deemed approval of the IESO business plan by the Minister of Energy (Minister).

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

a) Basis of financial statement preparation

The accompanying financial statements have been prepared on a going concern basis and in accordance with Canadian public sector accounting standards (PSAB) and reflect the following significant accounting policies.

The statements of financial position, operations and accumulated deficit, remeasurement gains and losses, changes in net debt, and cash flows for the year ended December 31, 2015, represent the activities of the IESO since inception on January 1, 2015. The comparative figures represent the pro-forma combined financial position and operations of the former IESO and OPA, as prepared under the accounting policies used in preparing the 2015 financial statements, as if the two entities had always operated as a single entity.

b) Revenue recognition

System fees earned by the IESO are based on approved rates for each megawatt of electricity withdrawn from the IESO-controlled grid (including scheduled exports) and embedded generation. System fees are recognized as revenue at the time the electricity is withdrawn. Rebates are recognized in the year in which the regulatory deferral account, before such rebates, exceeds regulated limits.

For 2015, the system fee for the newly amalgamated IESO was comprised of the combined rate calculations of the respective pre-amalgamation entities. Specifically, the former IESO rate base was calculated on electricity withdrawn from the IESO-controlled grid (including scheduled exports and embedded generation), whereas the former OPA rate base only considered Ontario electricity consumers. The IESO has submitted a rate case to the OEB for 2016 that proposes the use of one, consistent rate, based on electricity withdrawn from the IESO-controlled grid that includes scheduled exports and embedded generation.

These financial statements do not include the financial transactions of market participants within the IESO-administered markets.

Other revenue represents amounts that accrue to the IESO relating to investment income on funds passing through market settlement accounts, as well as application fees. Such revenue is recognized as it is earned.

Interest and investment income represents realized interest income and investment gains or losses on cash, cash equivalents, short-term investments and long-term investments.

Market sanctions represent funds received to offset payments disbursed related to penalties, damages, fines and payment adjustments arising from resolved settlement disputes.

c) Financial instruments

The IESO records cash and cash equivalents, investment portfolio and foreign currency exchange forward contracts at fair value. The cumulative change in fair value of these financial instruments is recorded in accumulated surplus as remeasurement gains and losses and is included in the value of the respective financial instrument shown in the statement of financial position and the statement of remeasurement gains and losses. Upon disposition of the financial instruments, the cumulative remeasurement gains and losses are reclassified to the statement of operations and all other gains and losses associated with the disposition of the financial instrument are recorded in the statement of operations. Transaction costs are charged to operations as incurred.

Cash and cash equivalents comprise cash, term deposits and other short-term, highly rated investments with original maturity dates of less than 90 days.

The IESO records accounts receivable, accounts payable and debt at amortized cost.

d) Tangible capital assets

Tangible capital assets are recorded at cost, which includes all amounts directly attributable to the acquisition, construction, development or betterment of the asset. The IESO capitalizes applicable interest as part of the cost of tangible capital assets.

e) Assets under construction

Assets under construction generally relates to the costs of physical facilities, hardware and software, and includes costs paid to vendors, internal and external labour, consultants and interest related to funds borrowed to finance the project. Costs relating to assets under construction are transferred to tangible capital assets when the asset under construction is deemed to be ready for use.

f) Amortization

The capital cost of tangible capital assets in service is amortized on a straight-line basis over their estimated service lives.

The estimated service lives in years, from the date the assets were acquired, are:

Class	Estimated Average Service Life 2015	Estimated Average Service Life 2014
Facilities	37	37
Market systems and applications	4 to 12	4 to 12
Infrastructure and other assets	4 to 7	4 to 7
Meter data management/repository	10	10

Gains and losses on sales or premature retirements of tangible capital assets are charged to operations.

The estimated service lives of tangible capital assets are subject to periodic review. The effects of changes in the estimated lives are amortized on a prospective basis. The most recent review was completed in fiscal 2015.

g) Pension, other post-employment benefits and compensated absences

The IESO's post-employment benefit programs include pension, group life insurance, health care, long-term disability and workers' compensation benefits.

The IESO accrues obligations under pension and other post-employment benefit (OPEB) plans and the related costs, net of plan assets. Pension and OPEB expenses and obligations are determined annually by independent actuaries using the projected benefit method and management's best estimate of expected return on plan assets, salary escalation, retirement ages of employees, mortality and expected health-care costs. The discount rate used to value liabilities is based on the expected rate of return on plan assets as at the measurement date of September 30.

The expected return on plan assets is based on management's long-term best estimate using a market-related value of plan assets. The market-related value of plan assets is determined using the average value of assets over three years as at the measurement date of September 30.

Pension and OPEB expenses are recorded during the year in which employees render services. Pension and OPEB expenses consist of current service costs, interest expense on liabilities, expected return on plan assets and the cost of plan amendments in the period. Actuarial gains/(losses) arise from, among other things, the difference between the actual rate of return on plan assets for a period and the expected long-term rate of return on plan assets for that period or from changes in actuarial assumptions used to determine the accrued benefit obligations. Actuarial gains/(losses) are amortized over the expected average remaining service life of the employees covered by the plan.

The expected average remaining service life of employees covered by the pension plans is 15 years (2014 – 13 years) and OPEB plans is 14.7 years (2014 – 14 years).

The IESO sick pay benefits accumulate but do not vest. The IESO accrues sick pay benefits based on the expectation of future utilization and records the accrual within accounts payable and accrued liabilities.

h) Foreign currency exchange

Transactions denominated in foreign currencies are translated into Canadian dollars at the rate of exchange prevailing on the date of the transaction. Items on the statement of financial position denominated in foreign currency are translated to Canadian dollars at the rate of exchange as of the financial statements date. The cumulative unrealized foreign currency exchange gains and losses of items continuing to be recognized on the statement of financial position are recorded in accumulated deficit as remeasurement gains and losses and shown in the statement of financial position and the statement of remeasurement gains and losses. Upon settlement of the item denominated in a foreign currency, the cumulative remeasurement gains and losses are reclassified to the statement of operations, and all other gains and losses associated with the disposition of the financial instrument are recorded in the statement of operations.

i) Use of estimates

The preparation of the financial statements in conformity with Canadian public sector accounting standards requires management to make estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities and the disclosure of contingent assets and liabilities as at the date of the financial statements. The IESO's accounts that involve a greater degree of uncertainty include the carrying values of tangible capital assets, rebates to market participants, accrued pension liability and accrual for employee future benefits other than pensions. Actual results could differ from those estimates.

3. LONG-TERM INVESTMENTS

Long-term investments in a balanced portfolio of pooled funds are valued by the pooled funds manager based on published price quotations and amount to $37,019 thousand (2014 – $33,758 thousand). As at December 31, the market value allocation of these long-term investments was 56.0% equity securities and 44.0% debt securities (2014 – 59.7% and 40.3% respectively).

Balanced portfolio of pooled funds

As at December 31 (in thousands of Canadian dollars)	2015	2014
	$	$
Opening balance	33,758	31,683
Purchase/(sale) of investments	1,889	(830)
Change in fair value	1,372	2,905
Closing balance	**37,019**	**33,758**

In addition to the balanced portfolio of pooled funds, the IESO has a long-term deposit with Canada Revenue Agency in the amount of $299 thousand (2014 – $221 thousand) pertaining to the Retirement Compensation Arrangements Trust (Note 6).

4. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

As at December 31 (in thousands of Canadian dollars)	2015	2014
	$	$
Relating to operations	43,125	43,851
Relating to tangible capital assets	5,743	7,312
	48,868	**51,163**

5. REBATES DUE TO MARKET PARTICIPANTS AND ACCUMULATED DEFICIT

In 2015, the IESO recognized $9,595 thousand in rebates due to market participants of system fees (2014 – $28,786). As at December 31, 2015, rebates due to market participants were $9,595 thousand (2014 – $nil).

Historically, the IESO's approved regulatory deferral account balance has been maintained at a maximum of $10.0 million ($5.0 million each of the former IESO and OPA for a combined $10.0 million). The 2015 approved regulatory deferral account balance will be established at the time of the 2016 rate case with the OEB, which is expected to be in the spring of 2016.

Prior to 2014, unrealized gains and losses from portfolio investments and foreign exchange were included in the balance of the regulatory deferral account (life-to-date total $4,144 thousand). As of January 1, 2014, only realized gains and losses are included in this balance.

As at December 31, the components of the accumulated deficit were as follows:

Accumulated Deficit

As at December 31 (in thousands of Canadian dollars)	2015	2014
	$	$
Regulatory deferral account (a)	10,000	7,604
Accumulated market sanctions and payment adjustments (b)	492	(970)
Smart metering entity – accumulated deficit (c)	(40,849)	(60,879)
PSAB transition items (d)	(47,353)	(51,265)
Remeasurement gains/(losses)	3,514	2,218
Accumulated deficit – end of year	**(74,196)**	**(103,292)**

a) Regulatory Deferral Account

As at December 31 (in thousands of Canadian dollars)	2015	2014
	$	$
Accumulated surplus – beginning of year	7,604	38,792
Revenues (before rebates due to market participants)	196,906	198,824
Rebates due to market participants	(9,595)	(28,786)
Core operation expenses	(181,003)	(186,093)
IESO – OPA amalgamation expenses	–	(10,883)
Recovery of PSAB transition items	(3,912)	(4,250)
Accumulated surplus – end of year	**10,000**	**7,604**

b) Accumulated Market Sanctions and Payment Adjustments

As at December 31 (in thousands of Canadian dollars)	2015	2014
	$	$
Accumulated surplus – beginning of year	(970)	706
Market sanctions and payment adjustments	6,021	2,687
Customer education and market enforcement expenses	(4,559)	(4,363)
Accumulated surplus/(deficit) – end of year	**492**	**(970)**

c) Smart Metering Entity - Accumulated Deficit

As at December 31 (in thousands of Canadian dollars)	2015	2014
	$	$
Accumulated deficit – beginning of year	(60,879)	(78,745)
Smart metering charge	46,215	45,735
Smart metering expenses	(26,185)	(27,869)
Accumulated deficit – end of year	**(40,849)**	**(60,879)**

d) PSAB Transition Item - Accumulated Deficit

As at December 31 (in thousands of Canadian dollars)	2015	2014
	$	$
Accumulated deficit – beginning of year	(51,265)	(55,515)
Recovery of PSAB transition items	3,912	4,250
Accumulated deficit – end of year	**(47,353)**	**(51,265)**

Effective January 1, 2011, the IESO adopted Canadian public sector accounting standards with a transition date of January 1, 2010. The adoption of PSAB was accounted for by retroactive application with restatement of prior periods subject to the requirements in Section PS 2125, *First-time Adoption by Government Organizations*. The corresponding change to pension and other-post employment benefits resulted in previously unrecognized actuarial losses and past service costs of $80,617 thousand at the date of transition being charged to the accumulated deficit.

The IESO includes a portion of the accumulated deficit resulting from the PSAB transition items in the annual proposed expenditures to the OEB for recovery through system fees.

6. DEBT

Note payable to Ontario Electricity Financial Corporation (OEFC)

In April 2014, the IESO entered into a three-year note payable with the OEFC. The note payable is unsecured, bears interest at a fixed rate of 2.046% per annum and is repayable in full on April 30, 2017. Interest accrues daily and is payable in arrears semi-annually in April and October of each year. As at December 31, 2015, the note payable to the OEFC was $90.0 million (December 31, 2014 – $90.0 million).

For the year ended December 31, 2015, the interest expense on the note payable was $1,841 thousand (2014 – $1,650 thousand).

Credit facility

The IESO has an unsecured credit facility agreement with the OEFC, which will make available to the IESO an amount up to $95.0 million. Advances are payable at a variable interest rate equal to the Province of Ontario's cost of borrowing for a 30-day term plus 0.50% per annum, with draws, repayments and interest payments due monthly. The credit facility expires April 30, 2017. As at December 31, 2015, no amount was drawn on the credit facility (December 31, 2014 – $39.0 million).

For the year ended December 31, 2015, the interest expense on the credit facility was $279 thousand (2014 – $664 thousand).

Retirement Compensation Arrangements Trust

In July 2013, the IESO established a Retirement Compensation Arrangements (RCA) Trust to provide security for the IESO's obligations under the terms of the supplemental employee retirement plan for its employees. As at December 31, 2015, the IESO has provided the RCA trustee with a bank letter of credit of $28,408 thousand (2014 – $23,370 thousand) the trustee can draw on if the IESO is in default under the terms of this plan.

7. POST-EMPLOYMENT BENEFIT PLANS

The IESO provides pension and other employee post-employment benefits, comprising group life insurance, long-term disability and group medical and dental plans, for the benefit of current and retired employees.

Pension plans

The IESO provides a contributory defined benefit, indexed, registered pension plan. In addition to the funded, registered, pension plan, the IESO provides certain non-registered defined benefit pensions through an unfunded, indexed, non-registered plan.

Other employee future benefits

The group life insurance, long-term disability and group medical and dental benefits are provided through unfunded, non-registered defined benefit plans.

Summary of accrued benefit obligations and plan assets

(in thousands of Canadian dollars)	2015 Pension Benefits	2014 Pension Benefits	2015 Other Benefits	2014 Other Benefits
	$	$	$	$
Accrued benefit obligation	482,994	452,466	83,455	69,427
Fair value of plan assets	475,714	455,229	–	–
Funded status as of measurement date	(7,280)	2,763	(83,455)	(69,427)
Employer contribution/other benefits payments after measurement date	427	207	582	586
Unrecognized actuarial (gain)/loss	(29,209)	(39,913)	(1,628)	(11,073)
Accrued liability recognized in the statement of financial position	**(36,062)**	**(36,943)**	**(84,501)**	**(79,914)**

Registered pension plan assets

As at the measurement date of September 30, the proportion of the fair value of registered pension plan assets held in each asset class was as follows:

	2015	2014
Canadian equity securities	19.9%	20.6%
Foreign equity securities	41.8%	40.7%
Canadian debt securities	39.0%	37.9%
Cash equivalents	0.6%	1.1%
Forward foreign exchange contracts	(1.3%)	(0.3%)
	100.0%	**100.0%**

Principal assumptions used to calculate benefit obligations at the end of the year are determined at that time and are as follows:

	2015 Pension Benefits	2014 Pension Benefits	2015 Other Benefits	2014 Other Benefits
Discount rate at the end of the period	6.00%	6.15%	6.00%	6.15%
Rate of compensation increase	3.75%	3.75%	3.75%	3.75%
Rate of indexing	2.25%	2.25%	2.25%	2.25%

The assumed prescription drug inflation was 8.25% for 2015, grading down to an ultimate rate 4.75% per year in 2029. Dental costs are assumed to increase by 4.25% per year.

Benefit costs and plan contributions for pension and other plans are summarized as follows:

(in thousands of Canadian dollars)	2015 Pension Benefits	2014 Pension Benefits	2015 Other Benefits	2014 Other Benefits
	$	$	$	$
Current service cost (employer)	10,547	7,707	2,857	2,339
Interest cost	28,143	27,787	4,797	5,241
Expected return on plan assets	(26,053)	(23,630)	–	–
Amortization of net actuarial loss	(667)	1,913	(753)	586
Benefit cost	**11,970**	**13,777**	**6,901**	**8,166**

(in thousands of Canadian dollars)	2015 Pension Benefits	2014 Pension Benefits	2015 Other Benefits	2014 Other Benefits
	$	$	$	$
Employer contribution/other benefit payments	12,851	11,973	2,314	2,321
Plan participants' contributions	5,162	3,722	–	–
Benefits paid	21,155	20,862	2,314	2,321

The most recent actuarial valuation of the registered pension plan for funding purposes was at January 1, 2014, and the date of the next required valuation is January 1, 2017. In 2015, a cost certificate was filed with Financial Services Commission of Ontario.

Principal assumptions used to calculate benefit costs for the year are determined at the beginning of the period and are as follows:

	2015 Pension Benefits	2014 Pension Benefits	2015 Other Benefits	2014 Other Benefits
Discount rate at the beginning of the period	6.15%	6.25%	6.15%	6.25%
Rate of compensation increase	3.75%	3.75%	3.75%	3.75%
Rate of indexing	2.25%	2.25%	2.25%	2.25%

8. TANGIBLE CAPITAL ASSETS

Net tangible capital assets consist of the following:

Tangible Capital Assets

(in thousands of Canadian dollars)	As at Dec. 31, 2014	Additions	Disposals	As at Dec. 31, 2015
	$	$	$	$
Facilities	55,818	116	(3,653)	52,281
Market systems and applications	262,840	16,364	(746)	278,458
Infrastructure and other assets	56,910	6,731	(3,461)	60,180
Meter data management/repository	35,434	466	–	35,900
Total cost	**411,002**	**23,677**	**(7,860)**	**426,819**

Accumulated Amortization

(in thousands of Canadian dollars)	As at Dec. 31, 2014	Amortization Expense	Disposals	As at Dec. 31, 2015
	$	$	$	$
Facilities	(23,970)	(2,287)	3,653	(22,604)
Market systems and applications	(241,287)	(10,669)	746	(251,210)
Infrastructure and other assets	(45,712)	(4,977)	3,461	(47,228)
Meter data management/repository	(21,805)	(3,524)	–	(25,329)
Total accumulated amortization	**(332,774)**	**(21,457)**	**7,860**	**(346,371)**

Net Book Value

(in thousands of Canadian dollars)	As at December 31, 2014	As at December 31, 2015
	$	$
Facilities	31,848	29,677
Market systems and applications	21,553	27,248
Infrastructure and other assets	11,198	12,952
Meter data management/repository	13,629	10,571
Total net book value	**78,228**	**80,448**
Assets under construction	21,321	23,268
Net tangible capital assets	**99,549**	**103,716**

In 2015, the impact of adjustments to management's estimates of remaining asset service lives was a decrease in amortization expense of $653 thousand (2014 – decrease of $665 thousand).

Interest capitalized to assets under construction during 2015 was $263 thousand (2014 – $165 thousand).

9. OTHER REVENUE

In its administration of the IESO-administered markets, the IESO directs the investment of market funds in highly rated, short-term investments throughout the settlement cycle. The IESO is entitled to receive the investment interest and investment gains, net of investment losses earned on funds passing through the real-time market settlement accounts. The IESO is not entitled to the principal on real-time market investments.

The IESO recognized investment income earned in the market settlement accounts of $3,212 thousand in 2015 (2014 – $1,724 thousand).

10. RELATED PARTY TRANSACTIONS

The Province of Ontario is a related party as it is the controlling entity of the IESO. The OEFC, OEB, Hydro One and Ontario Power Generation Inc. (OPG) are related parties of the IESO, through the common control of the Province of Ontario. Transactions between these parties and the IESO were as follows:

The IESO holds a note payable and an unsecured credit facility agreement with the OEFC (Note 6). Interest payments made by the IESO in 2015 for the note payable were $1,841 thousand (2014 – $1,545 thousand) and for the credit facility were $328 thousand (2014 – $671 thousand). As of December 31, 2015, the IESO had an accrued interest payable balance with the OEFC of $315 thousand (2014 – $364 thousand).

Under the *Ontario Energy Board Act, 1998*, the IESO incurs registration and license fees. The total of the transactions with the OEB was $1,671 thousand in 2015 (2014 – $1,642 thousand).

The IESO performed connection and bulk electric system exception assessments for Hydro One in 2015. In 2015, the IESO invoiced Hydro One $310 thousand (2014 – $437 thousand).

The IESO procures short circuit studies and protection impact assessments as part of connection assessments, approvals and meter services on IESO-owned interconnected revenue meters from Hydro One. Additionally, the IESO paid Hydro One for the removal of the microwave tower at the Clarkson location. In 2015, the IESO incurred costs of $525 thousand (2014 – $144 thousand) for these services. As of December 31, 2015, the IESO had a net payable balance with Hydro One of $149 thousand (2014 – $121 thousand).

The IESO performed connection assessment and approvals for OPG, administered telecommunication services to market participants to connect to the real-time market systems and provides market-related training courses. In 2015, OPG was invoiced $137 thousand (2014 – $54 thousand). As of December 31, 2015, the IESO had a net receivable balance with OPG of $4 thousand (2014 – $4 thousand).

11. FINANCIAL RISK MANAGEMENT

The IESO is exposed to financial risks in the normal course of its business operations, including market risks resulting from volatilities in equity, debt and foreign currency exchange markets, as well as credit risk and liquidity risk. The nature of the financial risks and the IESO's strategy for managing these risks have not changed significantly from the prior year.

a) Market Risk

Market risk refers to the risk that the fair value or future cash flows of a financial instrument will fluctuate to cause changes in market prices. The IESO is primarily exposed to three types of market risk: currency risk, interest rate risk and equity risk. The IESO monitors its exposure to market risk fluctuations and may use financial instruments to manage these risks as it considers appropriate. The IESO does not use derivative instruments for trading or speculative purposes.

i) Currency Risk

The IESO conducts certain transactions in U.S. dollars, primarily related to vendors' payments, and maintains a U.S. dollar-denominated bank account. From time to time, the IESO may utilize forward purchase contracts to purchase U.S. dollars for delivery at a specified date in the future at a fixed exchange rate. In addition, the IESO utilizes U.S. dollar spot rate purchases in order to satisfy any current accounts. As at December 31, 2015, the IESO did not have any outstanding forward purchase contracts.

ii) Interest Rate Risk

The IESO is exposed to movements or changes in interest rates primarily through its short-term variable rate credit facility, cash equivalents' securities and long-term investments. Long-term investments include investments in a pooled Canadian bond fund. The potential impact to the securities' value had the prevailing interest rates changed by 25 basis points, assuming a parallel shift in the yield curve with all other variables held constant, is estimated at $0.6 million as at December 31, 2015 (2014 – $0.5 million).

iii) Equity Risk

The IESO is exposed to changes in equity prices through its long-term investments. Long-term investments include investments in pooled equity funds. A 30% change in the valuation of equities as at December 31, 2015, would have resulted in a change for the year (before the impact of adjustments to the approved regulatory deferral account (Note 5) of approximately $6.8 million (2014 – $6.0 million). The fair values of all financial instruments measured at fair value are derived from quoted prices (unadjusted) in active markets for identical assets.

b) Credit Risk

Credit risk refers to the risk that one party to a financial instrument may cause a financial loss for the other party by failing to meet its obligations under the terms of the financial instrument. The IESO is exposed directly to credit risk related to cash equivalents' securities and accounts receivable, and indirectly through its exposure to the long-term investments in a Canadian bond pooled fund. The IESO manages credit risk associated with cash equivalents' securities through an approved management policy that limits investments to investment-grade investments with counterparty-specific limits. The accounts receivable balance as at December 31, 2015, included no material items past due and substantially all of the balance was collected within 30 days from December 31, 2015. The long-term Canadian bond pooled fund is comprised of primarily investment-grade securities.

c) Liquidity Risk

Liquidity risk refers to the risk that the IESO will encounter financial difficulty in meeting obligations associated with its financial liabilities when due. The IESO manages liquidity risk by forecasting cash flows to identify cash flows and financing requirements. Cash flows from operations, short-term investments, long-term investments and maintaining appropriate credit facilities help to reduce liquidity risk. The IESO's long-term investments are normally able to be redeemed within three business days; however, the investment manager of the pooled funds has the authority to require a redemption in-kind rather than cash and has the ability to suspend redemptions if deemed necessary.

12. COMMITMENTS

Operating commitments

The obligations of the IESO with respect to non-cancellable operating leases over the next five years are as follows:

As at December 31 (thousands of Canadian dollars)

	$
2016	5,616
2017	5,288
2018	4,793
2019	3,724
2020	3,051

The above figures include lease payments up to July 2017 which have also been included in the 2014 IESO-OPA amalgamation expenses ($1,700 thousand). As of December 31, 2015 this balance is $1,120 thousand.

13. CONTINGENCIES AND GUARANTEES

Contingencies

The IESO is subject to various claims, legal actions and investigations that arise in the normal course of business. While the final outcome of such matters cannot be predicted with certainty, management believes that the resolution of such claims, actions and investigations will not have a material impact on the IESO's financial position or results of operations.

Guarantees

The IESO enters into contracts with suppliers of electricity as part of its normal business operations. In some cases, these contracts require the IESO to support obligations with these entities. In 2012, the IESO entered into a letter of credit amounting to $1,349 thousand in support of a contracted obligation. As at December 31, 2015, no amounts have been drawn on the balance.

Executive Compensation at the IESO

Program Objectives

The IESO compensation program for executives was designed to attract, retain and motivate the calibre of executives required to support the achievement of the IESO's statutory mandate, business objectives and corporate vision. Accordingly, the compensation philosophy and programs were built on the following objectives:

- To focus executives on meeting the IESO's business objectives;
- To attract qualified and talented staff needed to carry out the IESO's mandate;
- To be able to retain valued staff;
- To have the flexibility to reward results and demonstrated competencies, and;
- To have compensation levels that are responsible and defensible to stakeholders and customers.

The philosophy underlying these objectives is that total compensation for executives should be sufficient, but not overly sufficient, to attract and retain the skills and competencies necessary to carry out the IESO's mandate.

Program Governance

The IESO Board establishes the compensation objectives for the following year's program. They delegate the responsibility to thoroughly review the compensation objectives, policies and programs to the Human Resources and Governance Committee (HRGC) of the Board, which make recommendations to the full Board for approval.

The Board is composed of 10 independent, external Directors, appointed by the Minister of Energy, with broad experience in the electricity industry and public sector organizations, plus the President and Chief Executive Officer. Their experience includes many years of dealing with human resource matters including the setting and implementation of compensation policies and programs.

In carrying out their mandate, the Board members have access to management's analysis and recommendations as well as those of expert consultants in the compensation field. These programs are reviewed annually with regard to business needs, program objectives and design, industry compensation trends, internal compensation relativities and external market relativities.

The Board also assesses risks associated with the establishment and implementation of compensation policies and programs. Annually the Board presides over and approves the IESO's Business Plan. An important component of this process is consideration of, and the implementation of, mitigating actions associated with enterprise risk management. This latter overarching process includes the assessment of all significant risks to the IESO, including risks associated with its compensation policies and programs.

In addition to the formal governance and oversight structure in place for compensation matters, the IESO discloses compensation levels annually for staff earning $100,000 or more as part of its public sector salary disclosure. For the IESO, a further level of public review and assurance is provided through a statutorily required annual review of the IESO's expenditures, revenue requirements and fees. Information related to compensation matters, including executive/management compensation and market relativities, is subject to Ontario Energy Board review. A range of small and large consumers, assisted by their legal and professional advisors, are represented in these public proceedings.

Market Comparisons

The IESO reviews the competitiveness of the executive compensation levels in relation to a peer group of Canadian organizations and general industry companies every other year at a minimum. The objective is to compare IESO executive compensation levels to those in the marketplace, particularly in relation to the median of the market.

Prior to the amalgamation of the IESO with the OPA, the Ministry of Energy had retained the Hay Group, a global management consulting firm, to evaluate and market price the CEO position for the new organization. Following Mr. Campbell's appointment to the CEO position on January 1, 2015, the decision was made to adopt a similar approach to evaluate and market price all other executive roles using the Hay point system.

As part of this process, the comparator group was redefined and is now comprised of 13 public sector and 11 private sector organizations, with the comparator data weighted on a 50/50 public/private sector basis. The comparator group represents a range of industries, core business activities and roles that are similar to the IESO: electricity, energy, asset management, financial services, infrastructure procurement, engineering and large-scale, complex IT functions.

The following 24 organizations were used as executive comparators within the analysis:

Public (13)	Private (11)
1. Business Development Bank of Canada	1. Capgemini Canada
2. CPP Investment Board	2. Enbridge
3. Enersource Hydro Mississauga	3. Fortis Inc.
4. Horizon Utilities Corporation	4. Manulife Financial
5. Hydro Ottawa	5. Navtech Systems Support Inc.
6. Metrolinx	6. Newfoundland Power Inc.
7. NB Power Holding Corporation	7. Rogers Communications
8. Ontario Teachers' Pension Plan Board	8. Siemens Canada Limited
9. PowerStream	9. Sun Life Financial Canada
10. SaskEnergy Incorporated	10. Suncor Energy
11. Toronto Hydro-Electric System Limited	11. Telus Communications Inc.
12. Veridian Corporation	
13. Workplace Safety and Insurance Board	

The job evaluation was independently conducted by the Hay Group using its point system and the following executive positions were covered by this review:

- President & CEO;
- VP Corporate Services & CFO;
- VP Market & Resource Development;
- VP Market & System Operations & COO;
- VP Conservation & Corporate Relations;
- VP Information and Technology Services and CIO;
- VP Planning, Law & Aboriginal Relations.

The Hay Group evaluated the Vice-President positions based on the job documents and additional information gathered from the CEO. Based on the evaluation points, a new salary structure was developed. The executive positions were then mapped into the new structure based upon their evaluated points.

Using the market information from the above peer group, the mid-point of the range of points for each executive salary grade was determined as the market price point for comparison purposes.

The mid-points of the new salary ranges were defined as the total direct cash compensation (annual base salaries plus annual short-term and long-term target incentive awards) of the hybrid market's price point at the 50th percentile for each salary grade.

The minimums and maximums of each salary range were calculated using typical salary range spreads at executive levels.

Program Description

The IESO program includes fixed and variable compensation, core and flex benefit plans, and pension provisions. IESO Human Resources staff participate in and review results from various compensation surveys and monitor internal compensation relativities and economic trends, such as gross domestic product trends, inflation and unemployment rates, which impact compensation. Based on this data and the IESO business priorities, Human Resources staff develop recommendations on compensation programs. External specialized compensation, benefit and pension consultants are utilized to ensure accurate, representative market compensation data is obtained, that current industry compensation trends are being utilized, as well as to provide insight and recommend adjustments to current programs.

Program Description – Fixed Compensation

Within the IESO salary ranges, individuals are assessed relative to an established competency model. This model consists of behavioural competencies such as strategic agility, building effective teams, command skills, sizing up people, political savvy and managing vision and purpose. Assessments are based upon demonstrated competency. Each individual is awarded a fixed compensation level within his or her band based upon his or her assessed competency.

Program Description – Variable Compensation

In order to promote a results orientation in the executive team, the variable pay plan forms part of the total compensation of executives. The IESO Board annually establishes a robust set of performance measures, which are evaluated each year.

The IESO Board assesses the corporate performance results and the CEO's individual performance results. Under the plan, having assessed the results against target, the Board has the ability to use some discretion in determining the final performance rating.

The variable compensation awards for the CEO and Vice-Presidents are capped at 10% of fixed compensation. The plan provides for awards below the capped amount depending on the performance results achieved. The 2015 annual award was paid on December 31, 2015.

Program Description – Group Benefits

The group benefit plan provides a core level of health and dental benefits, life insurance, disability coverage and vacation, which can be adjusted by individual executives through a flexible component within the plan. The flexible element provides executives the option of adjusting their benefits to meet their individual/family needs, including vacation above core amounts, levels of life insurance, health coverage and other components.

Program Description – Pension Plan

A defined benefit pension plan provides annual retirement income calculated as 2% of pensionable earnings during the highest paid 60 consecutive months of service multiplied by years of service (36 months for the pension earned prior to January 1, 2017, by the former IESO executives), to a maximum of 35 years. The pension formula is integrated with the Canada Pension Plan (CPP) to provide a level income stream before and after age 65, when the IESO pension is reduced to reflect benefits from CPP. The plan also has early retirement provisions as well as commuted value, pension deferral and reciprocal transfer options.

The plan provides a maximum benefit of 70% of highest paid, pre-retirement pensionable earnings. As the Canadian Revenue Agency limits the amount of pension payable from a registered plan, the IESO has a secured supplemental employee retirement plan to provide required pension income to meet the commitments of the plan above that payable from the registered plan.

The plan also provides several options including member's life only or joint and survivor pensions, as well as pre-retirement death benefits, to provide benefits to surviving spouses or beneficiaries.

Performance Measures & Impact on Compensation

The IESO annually establishes corporate performance measures relating to its business priorities during the business planning process. These are approved, monitored and assessed by the IESO Board of Directors each year. Individual performance measures supporting one or more corporate performance measures are also developed for each executive. As outlined above, the corporate results achieved each year impact on each executive's variable pay.

For 2015, the Board assessed the corporate results and determined that the IESO met all expectations. In addition to the corporate measures, each executive also had an individual set of measures and targets for the year, which aligned with the corporate performance objectives and IESO's business priorities, and these were similarly assessed. The Board assessed the results of the CEO's performance and the CEO assessed the performance of the Vice-Presidents, which were also reviewed with the Board.

Other Considerations

Compensation decisions may at times be impacted by market factors – such as the recruitment of an executive with specialized skills/competencies or possessing unique talents within the industry. To this end, individual incumbent arrangements are sometimes established relating to terms of employment and the possibility of future termination.

The CEO has an employment agreement that outlines terms and conditions for a 30-month period of employment ending on June 30, 2017, with a potential renewal at least six months prior to the end of the term. The agreement also provides up to 24 months of severance for termination without cause.

Compensation Restraints

The IESO executive compensation has been significantly impacted by the compensation restraint legislation in Ontario since 2010. *The Broader Public Sector Accountability Act* (BPSAA) imposes a general freeze on designated executives' salary, variable pay, benefits and perquisites subject to very limited exceptions.

Following the amalgamation of the two former organizations (IESO and OPA) on January 1, 2015, the total 2015 variable performance pay amount awarded to all employees and office holders became the cap for total variable performance pay to be paid out in future years. In other words, the total performance pay paid to all employees and office holders at the IESO in any subsequent year cannot be greater than the amount paid in 2015, as long as the BPSAA remains in effect.

Alignment of the Executive Compensation Plan with the Structure Established for the new CEO

With the appointment on January 1, 2015, of Mr. Campbell as the CEO of the merged organization, the IESO aligned the compensation plan for its Vice-Presidents with the structure established for the new CEO. Accordingly, in both cases, the variable pay component was capped at 10% of fixed compensation with no deferral. In order to align individual pay with the new salary structure, two executives received salary adjustments.

The figures reported as 2015 "Salary Paid" in the 2015 Public Sector Salary Disclosure for the executives include the 2015 earned variable compensation that was paid on December 31, 2015.

Executive Compensation Statements

The table below details the annual compensation for the year ended December 31, 2015, for the executives listed.

2015 Summary Compensation Table

Name & Position	Salary	Variable Pay[1]	Other Annual Compensation[2]	Total Cash Compensation[3]
Bruce Campbell President & CEO	$545,953	$53,636	$22,315	$621,904
Kimberly Marshall VP Corporate Services & CFO	$268,425	$25,772	$13,817	$308,014
JoAnne Butler VP Market & Resource Development	$353,044	$32,977	$26	$386,047
Kim Warren VP Market & System Operations & COO	$326,248	$30,965	$11,098	$368,311
Terence Young VP Conservation & Corporate Relations	$313,790	$30,090	$21,832	$365,712

1. 2015 earned variable compensation was paid in December 2015
2. Represents remaining flex credits paid out at year end as taxable income
3. These amounts will be reported as "Salary Paid" under the annual Public Sector Salary Disclosure (PSSD)

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